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ABSTRACT

Results of a survey of the information resources available in industrialized countries which might be used in a United Nations technology transfer program for developing countries are presented. Information systems and networks, organized information collections of a scientific and technical character, and the machinery used to disseminate this information are assessed in the light of their value to such a program. The main bibliographic sources are examined, as are special systems or informal information resources, and a discussion of dissemination systems and networks is followed by conclusions and recommendations for future action. Appendices include descriptions of biology, chemistry, and physics bibliographic systems; multidisciplinary systems; mission-oriented, applied science, and technology bibliographic systems; industry-specific systems; and patents and negotiable technology systems. A complete systems inventory is not intended; rather a sample is provided to assist in further work in developing the program to be charted. (FM)

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INFORMATION SYSTEMS AND NETWORKS FOR TECHNOLOGY TRANSFER

FINAL REPORT

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Prepared for Unesco
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Preface

This report presents the results of a survey of the information resources available in industrialized countries which might be used in a United Nations technology transfer programme for developing countries.

The very large number of systems and services which would potentially be of use in such a programme, and the relatively unstructured nature of the many small, though important industry-oriented services, present a series of problems in arriving at a complete and fully-assessed inventory. The present report does not pretend to be such an inventory; the sample of systems presented may however be sufficient to enable further work in development of the programme to be charted.

Acknowledgments

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This Report has been commissioned by Unesco and prepared under its guidance at the request of the Inter-Agency Task Force on Information Exchange and the Transfer of Technology established by Resolution 3507 (XXX) of the United Nations General Assembly. The study leading to the Report was funded by the Department of International Economic and Social Affairs (DIESA) of the United Nations and published by Unesco with funds from its Regular Programme.

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Executive Summary

AIMS OF THE STUDY

The general aim of this study is to assess the information resource in industrialized countries which is likely to be of value in a UN-sponsored technology transfer programme. By the information resource is meant: information systems and networks (in the widest sense of that term), organized collections of information of a scientific and technical character, and the machinery which has been established for the dissemination of this information.

The study deals with the information resource external to the UN-family of organizations, covered in a separate study by the Inter-Organization Board. No assumptions are made about the specific subjects on which information may be required, as it may be expected that this will differ widely between the countries. Instead, the endeavour has been made to cover as wide a spectrum as possible of subject areas in both applied science and technology and their applications. The report however, does not pretend to be a complete inventory of all information resources and sources. Instead, a sampling approach has been taken. In terms of the subject areas, medicine and the social sciences have been excluded, although information on these is naturally relevant to problems of developing countries.

Information Transfer and Technology Transfer

The study makes certain assumptions about the technology transfer process, and the relation of the transfer of information to this process. The information resource which can be made available in some fashion is seen as one component of a complex system, and the ordering, selection and transfer of information is inadequate in itself to effect a transfer of technology. These assumptions have an important bearing on the way the information resource might be used, and on the necessary infrastructure to implement a programme. Another important assumption is that information, in the broader sense, is required at three levels, the policy or strategic level, the management/technical level, and the operative level. The scientific and technical information resource is viewed mainly as applicable to the management/technical level; although indirectly useful in support of other information transfer activities related to the other two levels, it has little directly to contribute in these areas.

The Size of the Resource

To gain some idea of the scale of the problem, the following statistics are quoted:

- While nothing is known about the number of actual sources of technology-relevant information, there are some 1400 secondary services in science and technology which publish abstract journals in which the reports and articles produced as a result of scientific and technological research and development are summarised.

- There are probably some 400 machine-readable databases, of which about three quarters are technology-relevant.
- Probably over 80 percent of all the technology-relevant information is available, at least insofar as references to articles and reports are concerned, in machine-readable form. The total number of references of this kind runs into many millions.
- There probably are many industrial special information services designed to serve technology transfer needs for specific industries in the industrialized countries.

Exploitation of this resource to provide an information backup for a particular technology transfer problem is therefore complicated by its size and the diversity of actual sources.

In order to give some structure to the material presented in this report, the information resource has been described in three main sections, the "formal" resource, i.e. the basic bibliographic information on relevant reports, journal articles, conference papers etc., the "informal" information resource, where the emphasis is more on know-how information and finally, the machinery for identifying and delivering the actual information itself.

THE FORMAL INFORMATION RESOURCE

The formal information resource is characterized by its order and structure: this order and structure has arisen as a consequence of the need for scientists and engineers in research and development both to publish their results in the form of articles or reports, and to be able to retrieve work done by others relevant to their own projects. Consequently, there are effective abstracting services and computer information systems which are part of the highly developed scientific and technical information infrastructure. Backed up by libraries and reference services, the information seeking habits of the research and development clientele of these services are well developed.

The use of this resource in the technology transfer environment may, however, be difficult for three reasons. First, the information available, derived as a result of search processes, merely directs the user to original documents, which may not be readily available in the field. Second, the information, being designed for the research and development community, may not directly give "know-how" to users to whom technology is to be transferred. Third, the retrieval of relevant items from the very large data-bases which exist is difficult or impossible without the use of sophisticated computer systems and networks. However, this problem may be becoming less severe because organizations responsible for the operation of such data-bases often repackage their products into smaller sub-sets. Furthermore, the spread of data communication networks has increased and is still increasing (e.g. in North America and Europe), and this may soon extend to other continents, thus accelerating and facilitating access to and transfer of information.

Infrastructure Considerations

The nature of the formal resource suggests that it can be used in technology transfer only when two types of infrastructure are present [somewhere in the system as a whole]. These are an information infrastructure, analogous to "intermediaries", libraries, and information services now available in industrialized countries. A second type of infrastructure or extension service is required in the field to help identify user needs and access and to interpret information within the system. It may be noted that the major bibliographic systems can be used, not only to identify relevant reports etc., but also to identify institutions which are "technology producers" in special areas, so "technology users" can themselves identify nodes in the overall network with which they should make contact.

Identification of Sources

The report identifies the following major formal information resource sources (information systems) which, it is believed, provide a relatively complete inventory:

- Discipline-based systems	26	(of which many are sub-systems of 2 major systems in chemistry and physics, Chemical Abstract Services and INSPEC)
- Interdisciplinary systems	19	
- Major-application-area-systems	63	

The primary institutions involved in the production and distribution of the formal information resource are professional societies and institutes, government agencies or services and the like. Very few are purely commercial enterprises. Their products are generally available on either a free- or subscription basis, or at no charge under exchange agreements.

THE INFORMAL RESOURCE

The informal resource results from technology transfer activities within and between industries in industrialized countries. Several countries have established industry-based organizations, supported by industrial contributions or government grants and aid programmes, or both. For example, some 40 industrial research associations exist in the UK. Such organizations have frequently found it necessary to operate advisory services as part of their supporting role, and have accordingly accumulated information and data relevant to special problems of their industries. These data will include highly selected sub-sets of some of the major bibliographic systems, but will also include material from trade journals, special reports, marketing surveys, statistical information and many other types of information not available within the formal resource. The number of industry-specific information collections surveyed in this report, including special abstract journals, indicates that there are a few hundred such sources.

Thus, the important characteristic of these collections of information is that they are highly relevant to actual problems and provide, in the majority of cases, direct know-how. However, many of the organizations undertaking this kind of information collection stress that it is most useful as a back-up to locally run enquiry services, consultant and trouble-shooting activities, etc. They also produce a series of special information packages to aid field application. These range from bulletins and research notes to newsletters and current awareness services.

The Use of the Informal Resource

Although some of the work done by industry associations is clearly confidential within the membership, much of it is often made generally available on a subscription basis. Further, the creation of data-bases, often for the information staff's own use, has resulted in an ordering of the informal information resources much on the lines of that found within the structure of the formal resource. Thus information products ranging in a few cases (from the data-base itself) to many of the products, constitute a source of material which can be directly used by officials and persons involved with technology transfer in the developing regions of the world. Many of the organizations concerned have in fact already established an informal network of this kind. UNIDO, on the international level, has undertaken similar advisory and repackaging services for specific industries.

However, although these advisory and repackaging services provide an immediate possibility of assisting in technology transfer, they are probably not yet able to operate in this role at full effectiveness for several reasons. One reason is undoubtedly due to inadequate funding and organizational problems associated with the use of "semi-private" information because individual organizations, while willing to co-operate, cannot often do so without receiving reimbursement and having an organizational capacity to both satisfy requests for information resources and promote and intensify the effective utilization of the network. The question of confidentiality is also a further issue which needs to be taken into account. However, this does not appear to be a significant barrier at the present time.

THE SPECIAL RESOURCE

The study has identified further information resources which are directly relevant to technology transfer. These include well-established patent data-bases which are commercially or otherwise available, special systems which bring together "vendors" of technology (organizations having licenses to sell) and users which have technological problems for which they require solutions. There is also a major special system offering details of all products in the US, Canadian and Japanese manufacturers catalogues. These systems are clearly of importance to the future development of the network programme and some of them may be used directly by regional or other centres of technology transfer.

DISSEMINATIONS AND NETWORKS

The report discusses the means developed in industrialized countries to assist in the identification of items in the scientific and technical literature relevant to a particular problem, and the machinery for locating a source of supply of the original document and its delivery to the information user. The use of informatics technology in the shape of the very extensive computer networks, such as TYMNET and TELENET in the USA and ESANET and EURONET in Europe have been one of the factors which have contributed to the virtually exponential growth of on-line retrieval services in industrialized countries. Probably, over two million searches a year are now being performed in real time by users of such services. Although some developing countries are able to use such services at prices which can be afforded, extension of these networks to provide global access will depend on the solution of economic problems. These problems have an important regulatory aspect. Networks may also be used by access to the international telephone network, but once again, cost and the local telecommunications infrastructure may be a barrier.

Systems for the location and supply of original document copies are also available for use by developing countries, but aside from the solution of technical problems in location of the original document, the main problem is likely to be lengthy postal delays. The acquisition of local stocks able to supply document copies is likely to be extremely expensive if high satisfaction rates are aimed at. Some document delivery centers in industrialized countries are already experimenting with the use of computer networks to identify locations of particular documents, and this kind of technique might be applied, perhaps in different form,in developing countries, using for example, interconnections between the international telex network and document delivery or location centres.

RECOMMENDATIONS

It is recognized that decisions on the scope, content and organization of a UN-sponsored technology transfer programme will depend on many factors outside the scope of the study. Consequently, while the nature and size of the information resource provides a background against which questions of organizations and infrastructure are discussed in the final chapter of this report, these larger matters are not the subject of specific operational proposals.

The report does however, make recommendations for further action which is intended to facilitate decision making on the future development of the programme. These include:-

1. Feasibility of a Source Location System. Locating sources of useful information, whether they be data-bases or

other information corrections, institutions or people is a major problem to be faced in the design of the programme itself. Accordingly, a feasibility study is recommended, covering existing information directory type systems, to determine what gaps need to be filled, and the most cost-effective means of filling them.

2. Use of Informatics Technology at the Local Level. There exists some possibility of promoting a rapid growth of information transfer to developing countries by the use of informatics, but this depends on a number of factors as yet imperfectly assessed. A hypothetical case study approach is recommended to isolate the infrastructure elements which must be present for success, and to examine appropriate technologies which might be applied in particular regions. Clearly, technologies other than highly sophisticated computer networks should be considered.

3. Barriers to Information Transfer. The report discusses, in general terms, a number of problem areas in the transfer of information as a necessary part of technology transfer. Costs and economic factors generally are clearly one such barrier, there are likely to be many others. It is recommended that a review of existing activity on the study of international data flow be undertaken, with special reference to the specific problems of information for technology transfer.

CHAPTER I

INFORMATION AND TECHNOLOGY TRANSFER

BACKGROUND TO THE STUDY

This study is primarily concerned with the information resources in industrialized countries which could be used for the transfer of technology to developing countries and regions. The establishment of networks for the exchange of technological information by cooperative action in the member states, with the active participation of the United Nations family of organizations has been subject of resolutions by the General Assembly, and an Inter-Agency Task Force was established persuant to para. 6 of General Assembly Resolution 3507(XXX) to study the problem. Among the programme of studies, commissioned by the Task Force were a directory of information systems and services operated by the UN family of organizations, undertaken by the Inter-Organization Board, a survey of the needs and possibilities within developing regions, undertaken by the Regional Economic Commissions, and the present study on information resources in industrialized countries, to be carried out under UNESCO auspices.

The study reported on should be seen in its perspective as part of a larger activity; while information resources, whether internal to the UN family, or external, represent a factual basis on which decisions about the further development of the programme as a whole can be taken, their applicability to the programme depends both on the needs and the resources available to receipients in developing countries, and these may be expected to be highly variable. In this report, duplication with the directory activities of the IOB has been avoided as far as possible. It has however been necessary to refer to needs and infrastructure possibilities within developing countries and regions in a very general sense, to show how existing information resources in industrialized countries might be used, and the limitations imposed on their use by local conditions. Matching the requirements of particular developing regions for specific information with sections of the information resource has however been attempted in this study.

Objectives and Terms of Reference

The general objective of the study is to assess the information resources, in terms of existing systems and network in industrialized countries which have a role to play in the support of the programme as a whole. The terms of reference for the study, as defined in UNESCO contract SC 551 518, are reproduced below:-

"(a) Identify the major information networks, systems, data banks, information centres, libraries and any other institutions holding technological information resources in the form of bibliographic information, patents, standards, data, statistics, list of experts and catalogues, etc. which would be useful for supporting technological and industrial development of developing countries;

(b) Analyse the capacity of these establishments to provide information not already available in existing and proposed international information networks, in particular in the UNIDO Industrial and Technological Information Bank;

(c) Examine the terms under which technological information could be provided from these sources to developing countries and recommend new structures that might need to be set up to facilitate information transfer from these sources;

(d) Identify some of the above institutions which would adequately fulfill the role of providers of information."

It became apparent during the course of the data collection phase, that a detailed and complete inventory of all information resources, likely to be relevant to technology transfer was not practicable, and therefore a sampling approach was adopted. This issue will be discussed later in the present chapter.

The Technology Transfer Process: Preconditions Affecting the Use of Information

While we are not concerned with a review of the methodologies for technology transfer in this study, any examination of information resources and sources must be conducted in the light of certain assumptions about the nature of the technology transfer process as a complete system; transfer of information, in any form, is seen as part of the machinery for technology transfer, not as technology transfer itself. In later chapters, we will be dealing with existing resources for the transfer of information: the selection of the material, and the discussion of the necessary infrastructure to handle it, is bound to be influenced by assumptions made on the nature of the technology transfer process and the role of information transfer in the process as a whole. It therefore seems appropriate, at the outset, to specify the assumptions made in these respects, as part of the essential background to the study.

Technology transfer is regarded as a specifically directed aspect of the phenomenon of innovation, for which some general preconditions exist, such as:-

- adequate societal motivation on the part of those to whom the technology is to be transferred. This implies value judgments of approximately the same kind as those values inherent in the process of development of the technology which is to be transferred.
- Adequate financial resources to ensure the viability of the process as a whole. For example, in developed economies it has been stated that for each dollar spent on research and development in agriculture to produce a technological innovation, one to two dollars must be spent in the

field in persuading and training users to implement it. In the mechanical engineering sector figures of 1 : 10 : 100 have been quoted as the required ratios of the costs for research and development, design for production, and provision of the necessary facilities (physical production, management and marketing) in order to make a commercial success of the initial investments.

- Adequate manpower resources. This implies a sufficient reservoir of technical, managerial and manual skills, or the ability to produce these at the required level by educational and training programs.

Thus, it may be concluded that the blanket provision of resources in scientific and technical information contributes at best with very much reduced effectiveness to technology transfer, unless it is so ordered and organized that it fits within the particular cultural, educational, and financial context. It may also be noted at this point, that these assumptions seem valid for any technology transfer, whether within industrialised countries or from an industrialised country to a developing country.

THE ROLE OF INFORMATION IN TECHNOLOGY TRANSFER

If the preconditions suggested above exist, then it is clear that the provision of information is a vital first step in the process of technology transfer. Transferring information implies a certain ordering process at both ends of the chain, to match what is required with what is available. In practical terms, we cannot separate the process of information transfer from the way in which it is to be applied, since the nature of the "packet" is determined both by the way it is generated and the way it is to be applied at the receiving end.

The Problem of Application of Information

Experience in technology transfer programs in the industrialized countries seems to indicate that the provision of ordered and relevant information is not in itself sufficient to achieve the necessary transfer of technology, even when the broad general preconditions for the innovative process are present. Very often, the information must be physically conveyed to the user by an intermediary who is skilled both in the knowledge of the information stock and in the problems the user may encounter in applying it. Thus, the information infrastructure required for technology transfer is more complex and extensive than that required for meeting the needs of research scientists and engineers as users. Much greater emphasis must be placed on the 'know-how' and 'show-how' elements in the transfer of information from the basic stock to the ultimate user. This difference has far reaching implications on an information infrastructure applicable to a technology transfer program.

The need to match the real needs of users with information derived from research and development and practical experience calls for complex linkages. Even if given suitable information technology tools, the end-user to whom technology is to be transferred will normally be unwilling and unable to extract the relevant information for himself, whether he be part of a developing or an industrialized economy. On the other hand, the most skilled information scientist or subject expert will not usually be able to supply information of immediate relevance to a problem from the information stock unless he has the kind of understanding which can only be gained by on-the-spot experience.

Infrastructure Problems

The ability to apply relevant information clearly implies a necessary minimum information infrastructure on the part of the receiver. This must not only provide the necessary intermediary services to interface the end-user with the available information, but must also provide for an assessment of needs, which may well be unperceived on the part of the organization or individual to whom the information is transferred. Moreover, the information must be so presented that the end user can apply it, and this implies that at some point in the transfer chain, a form of repackaging will be necessary. This repackaging could take many forms, ranging from the selection of research data and its merging with practical experience in application of those data to provide know-how information, to shifting of available know-how information to match the particular circumstances of the local environment. Whether these functions are best carried out at one particular point in the chain, or whether they can be distributed is as yet an open question, but it is immediately obvious that the infrastructure necessary is far from simple and depends not only on the receipient and his environment, but on the nature of the basic information stock itself.

Characteristics of Information Required for Technology Transfer

At the policy level, developing countries may need information enabling them to assess possible alternative development strategies; among the many factors to be taken into account are the local market for particular products in relation to forecasts on the world market for these products, investment possibilities, the level of skill in the potential work force, the possibilities of training etc. etc. Probably no information package could be constructed which is directly applicable to these types of problems, but part of the general resource available in industrialized countries may be of value in this connection. Certainly however, this type of information transfer can only be done with the aid of skilled and experienced teams of individuals who fully understand the technologies to be transferred and the local environment in which it is to be transferred. Information sources in industrialized countries should be regarded as a back-up for such teams rather than directly exploitable to provide ready-made assessments.

A different type of information will be required at the management and technical level. Here, the decisions to be made will be more tactical in nature. Perhaps it will be necessary to study the results of applied research in the particular industrial or agricultural area concerned, and to assess their applicability in the light of local circumstances. Certainly, information resulting from similar experience, not necessarily confined to that of industrialized countries, will be required. At the management level therefore, while relevant scientific and technical information and documentation will be required, there must also be an emphasis on person-to-person transfer, possibly in the form of consultancy activities.

At the operative level, the information to be transferred is of a different character; while relatively simplified know-how packages of written information may still be useful, there may be language and educational problems generally which restrict their usefulness. Probably therefore, technology transfer for this group of potential users is best managed locally by means of training schemes, etc., and the information required is that which can be used by management in constructing their own training programs.

Since it seems that much of the information transfer process must be locally based, we should also consider the transfer of information to local centers of excellence, such as universities and research and development centres from the industrialized countries as a vital element in technology transfer. Meeting the information needs of such centres may turn out to be a major element in the long term success of technology transfer. Broadly speaking, the needs of such centres in the developing countries will not differ markedly from the information needs of similar centres in other parts of the world: normal information retrieval and supply techniques are applicable without repackaging of the products.

THE PHYSICAL INFORMATION RESOURCE

In this survey, the information resource has been limited to actual physical products, i.e., the written or printed word or its machine-readable analogue. However, other forms of information, including the spoken word, films etc., are clearly important in the 'show-how' element. As regards information sources, attention has been paid to organizations or information systems providing advisory services, particularly when these form part of an information package. The report presents and analyzes the subject primarily in terms of the physical information resource for technology transfer, rather than in terms of organizations and institutions providing relevant 'information' in its widest sense; the 'resource' has a certain structure, 'sources' do not.

Three types of information make up the physical information resource. These are described using the terms formal, informal, and special: this categorization has no special significance, being merely a convenient tool for analysis.

The Formal Information Resource

This part of the resource constitutes the basic scientific and technical information generated by pure and applied research throughout the world. Since technology has, by and large, followed the pattern set by pure science in publication of papers in journals and reports in which the results of R and D are announced, there is little to distinguish the two streams in the form of the material and the methods by which it is disseminated. In general however, the basic technological information stock will contain a higher percentage of 'grey' literature (i.e. laboratory and contractor reports etc.), as compared with the pure science information, where the majority of results are published in journals. The growth rate of publication in both pure and applied science has been steadily increasing. Some authors believe that this exponential trend is still continuing; at all events, retrieval of all items from this basic stock has been found to be virtually impossible for many decades, without the use of secondary services designed to sort and order the information. Consequently, abstracting and indexing services have grown up in every subdiscipline and applied science area, and these have been supplemented by machine-readable versions since the beginning of the 1960's. By now, probably over 90% of published R & D results in this literature category are available for retrieval by this method. This fact is of considerable significance to the use of the basic stock of the formal literature in technology transfer, because it provides an opportunity of cheaply and efficiently sorting the material, to produce subsets which are problem or application-oriented. Subsets may also be produced by source of relevant information.

However, even the most sophisticated information systems in the formal scientific and technical literature have been designed primarily for the research scientist or engineer who will normally have the support of extensive library services and a fully developed information infrastructure. Moreover, users of this type are fully aware of the value of information to their work, and have highly developed information-seeking habits. These factors throw some doubt on the direct usefulness of purely bibliographic material in the technology transfer process. A retrieval operation produces a list of 'addresses' in primary publications to which the user is referred, he then must seek out the original papers and extract from them what he can. Even then, the data may not provide him with the know-how information he needs. These are very real problems, in the experience of those participating in technology transfer in industrialized countries.

The Informal Resource

Much information valuable, and perhaps essential, to technology transfer exists outside the resource provided by formal publication in scientific journals and technological reports of the results of R & D. Trade newspapers, market surveys and reports, statistical data of all kinds, economic surveys, technical and commercial news letters are physical publications which will often contain information vital for technology transfer. Many other written materials, circulated privately or published on a limited basis to, for example, the membership of an industry association should also be included in the 'informal' category. For example, consultancy reports, technical reports on solutions to problems or assessing particular processes and items of equipment are all of great potential value, but aside from questions of confidentiality, there are no simple means to identify their existence.

The informal resource is, in general, characterized by its instructured nature, compared with the formal resource. There are few directories, and, because of the difficulty of identification and location, means of collection and retrieval are less well-developed.

Nevertheless, a process of ordering this part of the total resource is now taking place: two trends may be noted. First, commercial, economic, statistical and general information is being aggregated into data-bases for computer interrogation by subscribers to the information system concerned. Up to the present, most commercially available systems of this kind are U.S.-based, and consequently contain data relevant to requirements in that country.

Second, where support organizations with responsibilities for research, development or information activities exist for particular industries (industry institutions, research associations, etc.), these organizations have a significant role in technology transfer within the industry they serve. Consequently their information staffs have begun to systematize 'informal' information, amalgamate it with carefully selected sub-sets from the formal literature, and from this data-base produce a series of information packages tailored to the needs of their particular industry. These packages will often include a small, highly-specific abstract journal, and sometimes, a machine-readable data-base. Such systems exhibit all the characteristics of ordering the material (abstracting, indexing and retrieval methods) in the formal information resource, differencing only in their content and scope.

The Special Information Category

In this category are placed special-purpose information collections with particular relevance to technology transfer, many of them recent developments. They are characterized by the concept of negotiable technology, i.e. patent data*, data on licenses available and on equipment in the market.

These systems therefore constitute a kind of broad 'Exchange and Mart' operation, providing potential buyers of technology with highly-structured information on what is available, and (in one case) potential sellers with what is wanted). Patent systems, of course, have additional functions in the possibility of establishing whether a particular process, etc., has or has not been protected by patent.

DATA ON THE INFORMATION RESOURCE. LIMITATIONS AND PRESENTATION

The mere listing of the formal information sources, i.e. publically available abstract journals or their equivalent in machine-readable form, would require a cursory study of over 1,400 abstract journal titles listed in Abstracting Services, Vol. 1, FID, for their technological content. A more recent study of the formal scientific and technical literature, now in preparation, suggests that this total of abstract journals has risen to nearly 2,000. If we limit the sources to be studied to computer-readable versions, there were in 1975 over 300 bibliographic data-bases or data-banks publically available in the United States, according to Computer Readable Bibliographic Data-Bases, A Directory and Data Source Book by M.A. Williams and S.H. Rouse, American Assoc. for Informations Sciences, October 1976. It is believed that this total has by now risen to nearly 400. In 1976, A. Tomberg in the Aslib-EUSIDIC publication 'Data-bases in Europe', listed a total of 337 bibliographic files and 149 data-banks available within Europe. These included a large number of those recorded in the ASIS publication, since most of the US data-bases are available in Europe, either in the form of tape copies or by direct interrogation over data-links.

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*Patent information is also, of course, included in collections of R and D information.

In addition to these 'formal' sources of literature information, at least 70% of which are in science and technology, and are therefore of prima facie relevance to this study, there are many other sources which fall within the scope of the study as defined in the terms of reference. For example, UNIDO has published a series of over 20 Guides to Information Sources in a number of industrial application areas of technology. A typical monograph of this kind will contain 500 to 800 separate entries; while some of these entries refer to 'formal' sources, others list organizations, directories, statistical sources, and other potential sources of information for technology transfer such as consulting services. It will be appreciated that the UNIDO Guides cannot cover all areas of specialized technology which might be relevant to an assessment of the total information resource. A further example of the less formal information resource is provided by the existence, in several industrialized countries, of industry-based organizations for research and development in technologies highly relevant to the particular industry. These organizations have assembled a body of information and expertise directly geared to technology transfer in their particular areas, and are thus highly relevant to the study. In the U.K. alone, there are some 40 industrial research and development organizations of this kind.

The figures quoted above, which go some way to defining the size of the more readily accessible portions of the information resource, show that to attempt even a mere listing of those parts of it likely to be relevant to the transfer of technology would be entirely inpracticable. The data presented in the Annexes of this report do not therefore constitute anything approaching a total inventory, but it is hoped that they cover a sufficiently wide spectrum to provide a satisfactory sample on which general conclusions and recommendations for further action in the programme as a whole, can be based. Nevertheless, the UN-sponsored technology transfer programme will undoubtedly require an up-to-date (and updateable) inventory of information resources; some remarks on the nature of such an inventory and how it might be prepared, will be found in the final chapter of this report.

Subject Limitations

In selecting the portions of the information resource to be studied, it was necessary to come to some decision on limitation of the subject area to be covered. While 'a technology' can probably be strictly defined, information relevant to a technology transfer programme seems less susceptible to precise definition. For example, information relating to training methods and their results, such as might be found in a data-base dealing with vocational training and the acquisition of skills and aptitudes, could be of importance in an all-embracing technology transfer programme, as would also be an information system dealing with labour legislation, standards, etc. To have included such information sources would have required the analysis of sources in the social sciences, including relevant legislation, and it was felt that these areas could be better dealt with in the required depth in a later stage in the development of the programme as a whole. Medical research and medical science in general were also excluded, even though it is clear that a transfer of knowledge of this kind is a vital interest of the developing countries. A study of the information resources in medical technology, as distinct from the general area of medical research, would obviously be of considerable interest, but this again is more appropriate to specialist review in a later stage of development of the programme.

Aside from these admittedly arbitrary restrictions of the field for study, the view was taken that the material included ought not to be limited to the specific technologies, which can readily be defined in functional terms, but must also include the basic physical sciences and applied physical sciences. The use of such information and data in a technology transfer context will be discussed later, but clearly, it would have been unreasonable to fail to take into account the information resource in, e.g., chemistry, while considering the technology transfer process in the manufacture of plastics.

Finally, it was necessary for operational and administrative reasons to exclude many of the sources of information available within the UN-family of organizations, even though they are of immediate relevance to the study objectives. It is understood that the IOB is undertaking an extensive study of these sources, and it was clearly unnecessary (and impractical) to repeat this exercise in the present study. It is presumed that the further development and use of these UN-family information resources in the context of the programme as a whole will be a subject of specific studies and action by the bodies concerned.

PRESENTATION AND ARRANGEMENT OF DATA

The data obtained during the survey is presented in Annexes I - V as follows:

Annex I	Bibliographic Systems:	General Sciences by Discipline
Annex II	Bibliographic Systems:	Multidisciplinary Systems
Annex III	Bibliographic Systems:	Mission-Oriented and Applied Science and Technology
Annex IV	Industry-Specific Systems	
Annex V	Special Information Systems.	

Material in Annexes I, II, and III corresponds to the formal information resource, and is believed to be relatively complete in its coverage. The systems dealt with in Annex IV correspond to the informal part of the total information resource. Although lengthy it represents only a sample of such systems, and very often, industry-specific printed sources of information are purely lists of secondary journals. Annex V gives some examples of the special system category.

Chapter II of the report discusses the features and use of the main bibliographic systems, Chapter III describes the nature of industry-specific systems and their use, and the special systems. Chapter IV deals with existing mechanisms for dissemination of scientific and technical information, and conclusions and recommendations for further action are set out in Chapter V.

CHAPTER II

THE MAIN BIBLIOGRAPHIC SOURCES

INTRODUCTION

The main bibliographic information resources for technology transfer are listed in Annexes I, II and III. Annex I gives details on the main discipline-oriented systems; one system in biology (by BIOSIS), 24 in chemistry of which some 12 may be regarded as subsystems of one major system, the Chemical Abstracts Service (CAS), and three of subsystems of the German International Documentation in Chemistry (IDC); 7 systems are listed under physics, one of them (INSPEC) consisting of three associated subdisciplinary systems. It should be noted that the separate subsystems of the Chemical Abstracts Service are application-related, and each could equally well be considered as a separate data-base in Annex III, dealing with the applied sciences and technologies. However, to avoid complication in cross referencing, where possible families of systems or data-bases have been recorded in the Annexes as a unity under the general system name.

Annex II gives details on some 15 interdisciplinary systems, i.e. those which are not oriented to one particular discipline, but either consist of collections of particular types of materials, i.e. theses (Comprehensive Dissertation Index), library holdings (e.g. the MARC data-bases), general technology resulting from governmental or government agency research and development contracts (NTIS), or are multidisciplinary information systems designed to cover all branches of science and technology. Examples of the latter type are PASCAL, produced by CNRS, France, which comprises 27 separate subsystems or data-bases, each oriented to a particular discipline or applications area, and Referativny Žurnal, produced by VENITI, USSR. The separate sub-databases of both these last two interdisciplinary systems could have equally well been included in either the disciplinary sections of Annex I, or the application areas of Annex III. It may be noted also that some of the systems listed in Annex II are not strictly purely bibliographic systems, covering journal articles and reports in the published or 'grey' literature, but are designed to give information on current research projects. The Smithsonian scientific information exchange (SSIE) is a case in point. Such systems give details of ongoing research, rather than the results of completed research.

Annex III provides details of the main bibliographic systems in applied science and technology. Some of these are 'mission-oriented', they are collections of information required in particular areas of activity, such as space or energy research and development, which call for a transdisciplinary approach involving both science and various technologies. Others are oriented more towards general application areas such as agriculture, metallurgy, and transportation research and development. Some 45 information systems are listed in this Annex, some like the Commonwealth Agricultural Bureaux have many subsystems covering specific application areas.* It was found impossible to achieve absolute consistency in the arrangement of systems included in Annex III where general applications areas are covered, and in Annex IV where systems for specific industrial applications are listed. For example, Ship Abstracts, listed in Annex III, could equally well have been placed under the shipping industry in Annex IV. Textile science and technology systems are covered in Annex III, while food science and technology information systems have been placed under the food industry in Annex IV. Equally, many of the subsystems of major disciplinary and multi-disciplinary systems dealt with in Annex I, either constitute general application areas of the science concerned, or are highly specific to a particular industry, and therefore should be placed in Annexes III or IV. Where possible, the simple cross referencing employed in these Annexes, should allow a reader to move either way along the chain, i.e. from particular to general or from general to particular: but to produce a 'failsafe' totally consistent guide to systems and data-bases approachable either from the discipline or industry-application standpoint, requires an information retrieval system on databases and information systems which was beyond the scope of this study.

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*In the area of agricultural information, special mention must be made of AGRIS, a UN system, included in the IOB directory.

Information Recorded

So far as possible, a uniform system of presentation of the data has been employed in the Annexes, I to III, under the following scheme:-

- Name of system, including acronyms or former names;
- Producer, usually the organization to whom enquiries should be addressed;
- Scope, coverage and size, brief details only;
- Products, i.e. printed or machine-readable data-base or both;
- Data-base services, i.e. possibility of on-line use of this system, availability of current awareness or other services.
- Availability, i.e. whether the data-base itself may be leased, purchased or otherwise operated by third parties.

It should be noted that the brief comments on availability in the Annexes refer only to the machine-readable form. Clearly, if a printed version is published, this may be obtained under the usual type of subscription arrangement.

Further Information on Systems

Since the great majority of the data in Annexes I to III has been extracted from the two major sources, referenced in Chapter I, much more detailed information can be obtained on particular systems by reference to these documents.

ASSESSMENT OF BIBLIOGRAPHIC SYSTEMS IN TECHNOLOGY TRANSFER

Basic Characteristics

The systems described constitute the basic scientific and technical information stock, and between them, contain many million references to recent R&D results in the natural sciences. There is much overlap between systems; however, the multiplicity of approaches to ordering the information stock demonstrated by the systems is an advantage to the user, perhaps outweighing disadvantages of the duplication between systems. At all events, R&D users in industrialised countries seem to regard this multiplicity as either inevitable or worthwhile in itself, to the extent that these systems remain viable.

The systems described vary very considerably in terms of usefulness to technology transfer operations. Some data-bases included are purely scientific in character, and have only a remote possibility of directly contributing to technology transfer. At a later stage in the development of the programme it will certainly be necessary to study each system carefully in the light of the actual requirements. Pending the possibility of such a detailed study, these purely scientific systems have been included in order that their existence should not be overlooked.

The Role of Bibliographic Systems

How can these very large information systems, many of which were designed to suit the needs of research and development scientists in highly industrialized societies be used in a technology transfer program, if at all? What is the actual useful content of these data-bases and systems in aiding the industrial and agricultural development of regions with a less extensive research and development base? These are crucial questions which can not be definitively answered within the scope of this study. However, some pointers may be given.

First, the growth of an R&D capacity is clearly connected with the degree of access to the basic information stock, and the existence of a local R&D capacity depends, inter alia, on ease of access to this basic information. If this is accepted, one of the long-range objectives of a technology transfer programme must be to encourage this process; in this, the interests of the programme run parallel with those of other programmes, such as UNISIST, having the more direct objective of increasing the possibilities of access to basic scientific and technical information generally. Second, and on a more practical level, the problem of identifying and retrieving problem-relevant information from this vast stock is not entirely unmanageable: even in the printed versions of some of the major data-bases, the data-base producers themselves have undertaken a selection and repackaging operation which greatly reduces the skilled-labour-intensive task of scanning material likely to be relevant to a particular problem area. Many organizations offer computer produced bibliographies or current awareness services derived from the major data-bases which fulfill the same function. Thirdly, the very great expansion of on-line interactive retrieval services in the USA and Europe, and the increasing possibilities of accessing these by communications networks, are beginning to make it possible rapidly to select relevant items at locations remote from the computer centre operating the data-bases. There are several barriers to the practical effectiveness of 'do-it-yourself' information transfer by this use of the new informatics technology. It requires a local infrastructure, including reliable long distance telephone services, and trained intermediaries to provide the interface between the on-line system and information users, even in the case in which users are research and development scientists. Finally, the costs of accessing on-line systems of this kind, located in Europe or North America, from e.g. South East Asia, Africa, or South America may be prohibitive. (This issue is dealt with more fully in Chapter IV). For these and other considerations, it seems unlikely that direct use of the main bibliographic sources by on-line interrogation of computer data-bases operated by European or North-American information services could constitute the major constituent of a UN-sponsored technology transfer programme in the very near future. Nevertheless, the success of such experimental projects as the establishment of a node to the European Space Agency's Documentation Service in Morocco, and the 'MACRONET' suggestion for a network linking countries in the North African and Arab regions, show that this type of approach should not be lost sight of as the programme develops.

Bibliographic Information as a Vehicle for Technology Transfer

There are obvious drawbacks in relying on even the most carefully planned and effective methods of sorting, identifying, and repackaging bibliographic information as the main vehicle for technology transfer. It has been suggested in Chapter I that these drawbacks stem from the fact that even the most relevant selection of items from a data-base merely provides a list of addresses to research findings; to obtain the actual documents themselves requires an effective document delivery system. These problems have not been entirely solved to the satisfaction of users, even in highly industrialized countries: users often complain that they can identify a set of documents in half an hour using sophisticated on-line retrieval systems, but it may take them many weeks to obtain copies of the documents themselves.

Existing document delivery machinery and its application in technology transfer will be discussed in Chapter IV.

Aside from this, a more fundamental difficulty may be noted. In the view of many experienced technology transfer practitioners in industrialized countries, the actual primary information (i.e. research reports, articles, etc.) which results from a search of a bibliographic data-base, is not in a form which is directly usable by those to whom the technology transfer process is directed. The end-user wants 'know-how' information, and according to this viewpoint, the primary scientific and technical literature is not in a form which provides this. On the other hand, it may be noted that many of the organizations directly concerned with technology transfer in industrialized countries regularly use the main bibliographic data-bases as sources of information highly specific to their own industrial development problem areas. Obviously, the possibility of using the primary scientific and technical information varies very considerably from one data-base to another; those which are application-oriented are likely to contain a greater percentage of information directly usable in technology transfer than those specializing in academic scientific research results.

Nevertheless, the bibliographic data-bases remain as the main (in some cases the only) source of ordered information in science and technology. The problem is how to make effective use of this resource, not how to totally replace them with something different. What seems to be required is an additional interpretative function to select and translate where necessary, the results obtained from a bibliographic search into the kind of 'know-how' information required by the end-user. Probably the main users of the bibliographic data-bases in a technology transfer programme will be information and problem analysts in technology transfer centres serving management and planning personnel in industrial etc. enterprises.

THE INSTITUTIONS

The institutions which constitute the producers of the formal resource include national libraries, learned societies, government agencies, scientific publishers, commercial undertakings in the information industry, etc. etc. Aside from commercial undertakings, there is little difference between the kind of institutions represented in the bibliographic information resource in socialist and market-economy countries. National libraries, both general and subject-specific, and government agencies of one kind or another, fulfill much the same function as collectors, organizers, and disseminators of bibliographic information. Their products, and the services derived from these products, such as indexes, abstract journals and information profiles (SDI Services), are publically available under subscription terms, whether they are produced in socialist or non-socialist countries. Including commercial products, they are all publically available, and use beyond the frontiers of the originating institution is, to a greater or lesser extent encouraged.

The organizations responsible for bibliographic database production listed in Annexes I to III must obviously be considered as nodes in the technology transfer network. In the natural sciences and technology, the great majority are government agencies, professional institutions, not-for-profit organizations and the like. They constitute a reservoir of knowledge, both of primary sources of information, and on techniques for analysis, categorization, computerization, publishing and repackaging. In further development of the programme, it is clear that these organizations and institutions should not only be regarded as vendors or producers of a commodity vital to the programme, but also as sources of expertise on all aspects of information location and handling.

Moreover, some of the data-base producing organizations have devoted specific attention to technology transfer. For example, NASA has for many years operated a most extensive technology applications programme, including special Technology Application Centers, and an important series of publications (Tech-briefs and Technology Application Packages), designed to maximize the transfer of space technology results to industry in general. NTIS, whose data-base probably contains the largest single collection of technology information in the world, has a programme for direct use of this data-base in technology transfer; INSPEC developed a version of its data-base on physics, electrotechnology and computers specifically designed for technology transfer (see TINA, Annex V). Thus several of the institutions producing the basic bibliographic information resource are also centres of expertise in technology transfer methodology, and their experience will be a valuable asset to further development of the programme.

Information Originators

One of the main elements in establishing a technology transfer network is to create linkages between 'originating' institutions in industrialized countries and 'receiving' institutions in developing countries. In this way, the use of the 'formal' information resource can be broadened and deepened into a network of personal or institutional contacts, which are even more necessary for the effective transfer of technology than the 'invisible' college is in the case of basic scientific researchers. The bibliographic data-bases provide a means for the identification and location of originating institutions which could be of great value to this part of the programme. Many of these data-bases provide a corporate source index and an analysis of relevant material in terms of its corporate sources could readily provide a short list of institutes and laboratories to be contacted.

Attention should be drawn to the unique possibilities offered by current research data-bases such as SSIE and the current research portion of IRRD, which could provide direct access to individuals and institutes whose current work is directly relevant to a particular problem. Bearing in mind the time required for report writing and the publication - secondary publication - information processing cycle, an item of information on a normal bibliographic data-base probably relates to work completed at least a year before it appears; the individual may have moved elsewhere, or the institute may have changed its programme.

AVAILABILITY

All the data-bases listed in Annexes I to III are in one sense or another, in the public domain. Where a printed product exists, this may be purchased in the normal way; many institutions producing machine-readable data-bases will lease or sell copies to organizations for their own use, sometimes with additional fees or royalties payable, should the receiving organization wish to use the data-base for other purposes, such as current awareness services, made available to third parties. Most allow, for higher fees or royalties, use of their data-bases for the provision of on-line services to third parties; in a few cases there may be restrictions in this respect, in cases where the data-base has already been made available for on-line use under special arrangements with one of the organizations providing such services on a commercial basis. Some national and intergovernmental data-base producers allow other organizations free use of their data-base, or provide copies of it, as part of input exchange arrangements. In such cases the receiving organizations undertake to provide input and in return have exclusive rights to provide data-base services within a prescribed geographical area. At least one institutional data-base producer operates on an exchange agreement basis, i.e. its partners in other countries undertake to provide input and other services in exchange for royalty rights over any data-base services provided in their geographical area. The phrase 'not commercially available' in the availability paragraphs of Annexes I to III should not be taken as meaning that there are no means for third parties to obtain access to the data-base concerned: the meaning is that copies of the data-base itself are not available.

Costs

Detailed cost data is not given in this report, because subscription prices, leasing fees and royalties are subject to continual change. They are also extremely variable, ranging from zero (in the case of copies of a computer tape received under an exchange agreement) to several thousand dollars per year in the case of certain abstract journals, or machine-readable versions of the contents of such journals. Up-to-date price data for the various products in the basic bibliographic information resource are readily obtained by direct inquiry to the producers. Prices for services derived from the basic product, e.g., SDI profiles or the cost per connect hour for interrogation of the on-line version of the data-bases may be obtained from the service organization listed. In the majority of cases, producers require an annual subscription for the printed versions, a leasing or licensing fee for machine-readable versions where these exist (payable by the service organization providing products to third parties from computer tapes), and royalties payable per connect-hour by the user of on-line services. Licensing or leasing fees may vary from around $1,000 per annum to $8,000 per annum, and connect-hour charges average about $15 for on-line users, ranging from $4 per hour to $25 per hour. The intending user of on-line services must also reckon with the charges required by the on-line service operator and communications charges, both for the network itself, and for accessing the network. The service charges are a minimum of $25 to $35 per hour, dependent on the operator, and communications and network charges will obviously vary according to the location of the using institution.

CHAPTER III

THE 'INFORMAL' INFORMATION RESOURCE: SPECIAL SYSTEMS

INTRODUCTION

As already noted, the informal resource is characterized by a relatively high degree of specialization in its application to specific industrial and technical problems. While the products are often references to articles and reports, the institutions are, in general not only sources of printed material, but also operate some kind of advisory of field service. In Annex IV are grouped those information services which are essentially industry-oriented in some 25 sections, the first being a general section and the remaining 24 specific to individual industries. The number of sources of printed information of one kind or another which are specific to particular industries runs into many hundreds, but full details on these sources are available from the UNIDO Guide Series, where the particular industry is covered, and it would be inpracticable to re-list them in this report. However, it was thought desirable to list secondary resources, i.e.

abstracting services, as these give an indication of the scale of the resource available. Naturally, many of the journals or data-bases in these lists have already been mentioned in Annexes I to III, but an element of duplication here may not be out of place since it provides an alternative approach to source location.

It was quite impracticable, within the resources available for this study, to attempt any kind of listing of organizations whose information services for industry extended into the advisory service or consultancy field; to do so would have meant reproducing much of the material already published in the UNIDO Guide Series. Instead, some examples of comprehensive but specialized information services to industry are noted in Annex IV.* The UNIDO Industrial and Technological Information Bank is a special case, and because of its prominence in the terms of reference of this study, is discussed separately, later in this chapter.

A sample of special information services, directly oriented towards technology transfer, is briefly discussed in Annex V. For the sake of convenience, patent systems, technology marketing systems, and systems offering methods of locating equipment for sale, are grouped together in this Annex.

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*In this report, most of these examples have been taken from the information services of U.K. Industry Research Associations. Their information activities are highly developed, and are not untypical of services offered by similar institutions in other industrialized countries.

CHARACTERISTICS OF INDUSTRY-ORIENTED INFORMATION SYSTEMS

Sources of Information

Most organizations whose tasks include providing 'front line' information for industry have found it necessary to include material not usually covered by the larger science or technology information systems, for example, trade newspapers, market reports, special reports, etc., etc. In a number of cases, the organization itself undertakes research on particular problems for its membership and these reports will usually be part of the organization's own data-base, whether this is itself made available or not. Also contained in this data-base will be the results of its advisory or field service, and consultancies undertaken for individual clients or groups. Thus, the collection of information available within these institutions, whether it will be contained in filing cabinets, card indexes, or on a computer file, constitutes a highly specialized but very broad and complete database of both bibliographic and know-how information specific to the industry concerned. The products of other abstracting and indexing services will be regularly scanned for relevant material, and whether or not the institution reproduces all or part of its database, in their printed or machine-readable forms for external use, the information staff of these associations will have an unrivaled knowledge of sources of useful information relevant to the problems of the industry which they serve.

Availability

In the socialist countries, specialized collections of industry-specific information are generally made by ministries responsible for specific groups of industry, or government agencies responsible for industrial planning and development, and sometimes by large industrial concerns themselves. These information collections are analogous to those of the institutions controlling nationalized industries in some of the non-socialist industrialized countries. In either case, while the content of such collections may not be regarded as specially confidential, they are not generally available to the public in the same way as a bibliographic data-base in the more general areas of science and technology, such as Referativny Žurnal or the Bulletins Signalétiques. Nevertheless, it is not out of the question that through exchange of information agreements or aid programmes and the like, access to such collections might be possible. Turning to industrial institutions of the research association type, many produce newsletters and bulletins which are available outside the membership; some produce abstract journals for machine-readable data-bases which are available on exactly the same type of subscription or leasing/royalty arrangements as for secondary publications and services, discussed in Chapter II. In most cases, however, access to specific research reports, surveys and state-of-the-art publications, is restricted to the membership. Consultancy reports are in general only available to clients who commission them. Often, an industrial institution of this type will specialise in providing a question answering service, and this again will normally be restricted to the membership. Most associations are able to include foreign organizations as members or associate members, with possibly special arrangements for membership fees, etc.

Other Information Products

Many of the organizations concerned have extensive lists of self-generated printed material which is made available, usually to the membership only, but some parts of which are generally available. Outside the category of technical or research reports, market surveys, statistical data relevant to the particular industry, etc., there are often several examples of repackaging as an aid for technology transfer, for instance technical notes and bulletins, newsletters, etc. Those organizations who have invested in mechanizing their data-base will use it to provide current awareness and alerting services, and computer-produced bibliographies, which may be available for sale outside the membership.

THE USE OF SPECIALIZED INDUSTRY SERVICES IN TECHNOLOGY TRANSFER

Direct Use of Information

It is clear that the printed or computerized information products of highly industry-specific information services are potentially a direct means of technology transfer to sister industries in the developing regions, and for this reason, a complete and up-to-date inventory of the relevant organizations and their information products would be an important activity of any executive organization which may be set up to implement the program. It could well be that part or all of the information packages produced by such organizations could be directly used by local centres in developing countries having the responsibility for technology transfer. During the course of the study it has become apparent that this is already happening in a number of cases, as a result of requests for help from such centres; in one case, the supplying centre has designed and implemented an entire information programme for the receiving centre. In many cases, membership of a particular industrial research organization in an industrialized country is not limited to firms in their country, overseas membership already includes organizations in developing countries. To some extent, therefore, an international technology transfer network is already being established although, as yet, this has little structure and its growth may be inhibited by lack of funding possibilities. The few industrial research organizations studied are either self-financing from membership subscriptions, or in some cases have a measure of government support. While their managements are clearly aware of their potential in the transfer of technology to developing countries, and are concerned to do what they can in this respect, the basic problem seems to be one of funding. While obviously considerations of commercial secrecy and intellectual property rights in the 'know-how' generated by industry organizations in industrialized countries cannot be ignored, there seems to be every reason for a UN technology transfer programme to include strengthening and extending this kind of network as one of its priority tasks.

Advisory and Consultancy Services

Without exception, all the industrial research organizations contacted during the course of the study, regard advisory services as a primary method of achieving their technology transfer within their own membership. Their information services operate an inquiry service in which, at the very least, answers to questions and advice on problems can be given over the telephone. Many of the staff will be occupied with consultancy work, ranging from relatively formal studies of methods, management techniques, and introduction of new technology, to trouble-shooting activities of all kinds. It is probably unnecessary to stress once again the close relation between information services for technology transfer, in the shape of physical products such as printed matter or computer tapes, and the human back-up to such services which must be provided by individuals trained to bridge the gap between the information resource and its actual application to practical situations.

Informatics Technology Appropriate to Use of Industry-specialized Information

Apart from the collection and scanning of material from specialized industrial data-bases in industrialized countries, technology application centres in developing regions could perhaps consider some form of mechanization if a minimum infrastructure exists, and in fields in which the data-base is already available in machine-readable form and is relatively small. The cost performance of minicomputers is improving very rapidly, and, in the appropriate cases, these machines might be employed to allow centres in developing countries or regions to do their own searching. Information data-base management and retrieval systems suitable for the purpose are available commercially, and such software packages would enable centres not only to retrieve from existing small data-bases and industry-specialized data-bases, but also create and operate their own data-banks including locally-generated data. Whether such methods are practicable will of course entirely depend on local conditions, and in particular, the availability of skilled personnel both in information work and in computer operation.

Other forms of mechanization to aid technology application centres in developing regions might also be considered; microfiche and microform are a convenient and cheap method of rapidly conveying printed information, and relatively simple mechanical means for displaying and copying particular frames are commercially available. Prior identification of frames to be displayed can be based on printed indexes or, conceivably by minicomputer. The advantage of such systems is that they provide a means for direct access to whole texts, rather than the two-stage process associated with the main bibliographic systems discussed in Chapter II.

Identification of Further Collections

In establishing a full inventory of smaller collections of technology transfer-relevant information, use should be made of national referral services (e.g. the Library of Congress Referral Service, SOSDOC in France), and organizations having a coordinating responsibility for national information services. Examples are BNIST in France, CISTI in Canada, GID in the F.R.G. Other organizations, such as the American and European Associations of Scientific Information Dissemination Centers (ASIDIC and EUSIDIC respectively) could assist in the location of highly specialized information collections; organizations such as the Council of Directors of Research Associations in the U.K., and the parallel European body, Federation of European Industrial Cooperative Research Organizations, will be aware of industry associations having technology information programmes. Of particular interest in the collection and assessment of industrial information for technology transfer to developing countries from the F.R.G. is the Technologie Transfer Leitstelle of the Fraunhofer Gesellschaft in Stuttgart.

SPECIAL SYSTEMS FOR TECHNOLOGY TRANSFER

The systems listed in Annex V have a particular interest for the further development of the programme. They are rather different to those previously dealt with. Some brief notes on their possible application and use follow.

Patent Information Systems

Patent systems, unlike bibliographic reference systems provide immediate information on innovations, and if they include abstracts or other descriptions of the process or innovation patented, can immediately indicate whether the process or article patented is likely to provide a solution to a particular problem. Moreover, the ability to search for families of patents is of considerable value in following up particular lines of industrial development. Because of the importance of precision and recall in a patent search, the indexing systems used must be very accurate and precise, and this can be a valuable asset in searching for processes or equipment exactly corresponding to precisely defined needs.

All the patent systems noted in Annex V are, in one way or another, generally available for searching; for example, the Derwent system may be searched using TYMNET, and will shortly be available via INFOLINE. The INPADOC system is not available on-line, but INPADOC Vienna and its agents will carry out searches for clients.

It should perhaps be noted that patent data is not confined to the data-bases listed in Annex V. Many of the main bibliographic data-bases also include patent information in their coverage area; similarly, most of the organizations operating industry-specific information systems include patent information in their data-bases and the products derived from them.

The TECHNOTEC Service: The TINA Data-base.

These two related initiatives by the Control Data Corporation and INSPEC, represent a new approach to the problem of matching demand for a specific technology and its supply. As will be seen from the entries in Annex V, the TECHNOTEC concept is to provide, on a computer data-base, listings of both requirements and available negotiable technology, i.e. innovations for licensing, consultancy expertise, etc. Potential suppliers and potential users both pay a fee for entering an item on the data-base, or a potential user may search the data-base on-line, or may request this to be done centrally. The TINA data-base is an integral part of the service, and is in essence a selection from the normal INSPEC bibliographic data-base on physics, electro-technology and computers. The selected items are those showing evidence of a new innovation or process, and the data-base is searchable either by the normal INSPEC bibliographic descriptors or by patent codes. The data-base can be searched interactively, with the rest of the TECHNOTEC data-base, or a printed current awareness service may be purchased, listing references to new innovations under each of the patent indexing codes used.

These services are of potential value in the programme for themselves, and also the new methodology they employ in trying to match demand and supply in technological innovation. A review of the effectiveness of this methodology, in relation to meeting the actual information requirements on innovations etc., would be of value in the later development of the programme.

THE UNIDO INDUSTRIAL AND TECHNOLOGICAL INFORMATION

The Concept in Outline

For several years past, UNIDO has operated an Industrial Information Inquiry Service answering about 16,000 questions on industrial problems from developing countries. The current rate is around 9,000 questions a year. This direct technology transfer service is supplemented by a publication series, including Industrial Research Abstracts, and the UNIDO Guide Series. This, together with those external and internal sources of expertise within UNIDO constitutes a unique body of knowledge of both developing countries' needs and the means of meeting them from the industrialized countries. The Industrial Data-Bank concept involves a systematic approach to bringing this body of information, information sources, and expertise into more effective use. Following surveys of the requirements for technological information in developing countries, and the possibility of meeting these from industrialized countries, it became apparent that there was a need for an integrated system giving improved access to information sources, repackaging information and assessing it as necessary. The creation of such a service would itself strengthen and develop national infrastructures actively concerned in technological development. Initial studies in developing countries indicated a number of priority areas for information among which were placed information on some important strategic issues such as natural resources, materials, engergy and investment. It is probably for this reason that the emphasis of the initial operation of the data-bank is directed towards meeting the needs of decision makers in government and industrial planners. although the approach is essentially pragmatic and concerned with optimizing the resources and expertise at present available to UNIDO. Consequently, a pilot programme is being carried out in 1977/78 for two major areas of industrial activity important in the developing countries, the iron and steel industry and fertilizers and agricultural machinery. The further development of the data-bank will be the subject of a review of this pilot operation in these two sectors.

Information Sources and Their Use

With regard to information sources it appears that the Bank will initially concentrate on systematizing in-house resources without duplicating the work of external sources. Emphasis is placed on the assessment of information in the light of the known requirements of developing regions. The possibility of 'on-site' evaluation of the utility of the information provided is also foreseen.

The external operations of the Bank are viewed as the preparation of document lists, technological profiles, guides to information sources, and special documentation on relevant research and the choice of equipment, licenses and patents, and on specific industrial sectors or products of special interest. The output of the Bank will of course depend on requirements, which may range from question-answering to 'on-site' assessment of a problem, and consultancy work.

The Users

The services of the Bank will be designed specifically to serve the needs of policy and decision makers in government, research and development organizations, technology transfer centers, chambers of industry and commerce, technical institutions, and public and private organizations of various kinds. In the first phase, the Bank will concentrate on institutions and producers rather than individuals or firms.

Information Handling

Information generated within the Bank will be processed, apparently using normal bibliographic techniques such as abstracting, classifying and indexing. Appropriate storage, retrieval and dissemination techniques will be developed or instituted, including microfiche storage and dissemination and eventually computerization. Computerization of the databank will not be considered until after the results of the pilot phase operation have been reviewed, and the future development of the Bank assessed.

Comments

Clearly, the UNIDO Industrial and Technological Information will constitute a valuable and most important tool for the proposed programme. Systematization of UNIDO's 'front line' experience of the use of information resources, in the widest sense, in support of practical technology transfer operations is an invaluable asset, not only to further the practical work of helping developing countries to choose, acquire and implant new technologies, but also could constitute an important feed-back mechanism to help decisions on priorities for the programme as a whole, the weighing of one methodology against another, and similar operational questions. For optimal effectiveness both in its primary and in its feed-back role, special forms of retrieval may be necessary; these may not adequately be provided by classical bibliographic indexing and retrieval systems, and it would therefore seem opportune now to consider with some priority, possible computer data-base systems. It is a matter of general experience that, if computerization is in the end inevitable, it is better to consider its implication on the manual processing of documents at the initial stage, before the form of the manual system has become so developed that the backlog of material which may have to be reworked in computerizing the records becomes qualitatively and quantitatively unmanagable.

CHAPTER IV

DISSEMINATION SYSTEMS AND NETWORKS

INTRODUCTION

The previous chapters have been concerned with the nature of the information resource in industrialized countries which could be used in a technology transfer programme; while it has been noted that successful technology transfer implies much more than the transfer of written material, this is an essential first step. The information resource in terms of the printed word is very large indeed. There are probably some 60,000 journal titles in science and technology published throughout the world, and articles in these journals, together with the mass of reports and other literature, constitute the primary information resource, the relevant parts of which must be identified and made available for transfer. Consequently, elaborate mechanisms for scientific and technical information transfer have been developed in industrialized countries, and this machinery may to some extent at least, be used for information transfer within a technology transfer programme.

There are several steps to be considered. First, the existence of relevant documents must be established and this "information about information" must be transferred to the information user. The use of abstract journals and other data-bases has already been discussed in Chapters II and III, and in the present chapter we are only concerned with the means by which this kind of information may be disseminated to the user. Second, having established the identity of relevant documents machinery for locating and supplying copies of the actual documents themselves is required. The possible value of systems and networks developed in industrialized countries for these two main information transfer functions will be discussed in this chapter.

NETWORKS AND SYSTEMS FOR DOCUMENT IDENTIFICATION

It is not proposed here to discuss systems for classification and retrieval of documents, but it should be noted that thanks to the concept of Universal Bibliographic Control (UBC) inherent in the UNISIST programme standardized methods of describing documents are now more or less universally used, it seems unnecessary to discuss the various methods of retrieving the bibliographic details of a set of documents corresponding to a particular request. The methods range from manual retrieval using abstract journals and card indexes, to off-line and on-line computer information retrieval systems. The transfer of information technology is indeed a part of a technology transfer programme, but the subject is too wide in scope to be covered in this study.

Existing manual and computer retrieval systems in industrialized countries may clearly be used by information centres in developing regions; subscriptions to selective dissemination of information services may be well worth while for technology transfer centres, if only to build up their own data-base of information relevant to particular problem areas. Cooperation between highly specialized libraries in industrialized regions and information centres in developing countries to assist the latter in building up a set of annotated bibliographies relevant to their special needs, could also be considered. In recent years, a new type of information service has made its appearance, particularly in the USA. Information brokers will, for a fee, undertake in-depth searches of information sources on request, using manual and computer methods, backed-up with an evaluation of the output, giving the user what amounts to an analysis of the available information on a particular problem. The information brokers may also seek to supply a full service including an element of document delivery, but this type of service may be expensive.

Computer Networks for Direct On-line Retrieval

Computer Networks enabling a user in an information centre to interact in real-time with the data-base or data-bases likely to contain relevant information are now wide-spread, forming a major part of the information dissemination resource in the industrialized countries. A wide variety of computer-telecommunications technology is used, ranging from single large computer installations, connected to remote network nodes by leased data circuits, through ring structures to which several host computers at different locations are attached, terminals being connected to the appropriate host by circuit switching techniques, to their ring structures with packet-switching between hosts and terminals. Packet switching gives special advantages in the direct interrrogation of STI data-bases because, granted a reasonable total volume of traffic, the costs of transmitting a megabit of data through the network are virtually independent of the distance between the point of origin and the destination; further, the routing techniques used are ideal for levelling out the traffic load throughout the network, thus providing a degree of optimization of the asymmetric traffic typical of an on-line interrogation of an STI data-base. The following are brief notes on computer networks currently used for on-line STI interrogation.

TYMNET. This network is based in the USA and covers most of the North American continent, being accessable from Canada and Mexico. TYMNET also reaches Western Europe via nodes established by several European PTTs. The service, known as TYMSHARE is a joint operation of the PTTs and the American TYMSHARE Corporation, which operates the US network as a private (i.e. non-common carrier) network. From Europe, users see the network as a public data network providing direct real-time access to about 80 STI data-bases, as well as other time-sharing services.

TELENET. This network has been established as a value added network in the USA. It has been designed as a commercial packet-switching network on the principles established in the development of ARPANET, the first major operational experiment in packet-switching systems. TELENET is designed to use both ground-based circuits and satellite circuits, and has nodes throughout the United States and now extends to Europe under a joint PTT-TELENET cooperation arrangement similar to that for TYMSHARE. It provides an alternative means of access to most of the STI data-bases offered over TYMNET.

MARC 3. MARC 3 is probably the most extensive computer network in the world, covering the United States, Europe, Australia, and Japan, and is thus of potential interest to users in several developing regions. The computational facilities are centered in two large supercentres in the USA, comprising many interlinked processors and memory systems. To date, it has not specialized in STI bibliographic data-bases, as TYMNET and TELENET have done.

CYBERNET. This is a network of CDC computers operated by the Control Data Corporation. At present, there are two separate networks, one in the USA and one in Europe. The chief interest of CYBERNET in technology transfer is that it carries the Technotec Service and the TINA data-base (see Chapter III).

ESANET. This network, operated by the European Space Agency carries some 20 STI data-bases, and has nodes situated in most Western European countries and Scandinavia. Of particular interest is an extention of the network to North Africa

(Marocco), carried out under UNESCO auspices; proposals have been made to extend this connection to other countries in the North African region but this will depend on funds being made available from sources outside the European Space Agency.

SCANNET. This is a packet-switched network operated by the Nordic Council for Technical Development, with nodes or host computers in the four Nordic countries. It operates a number of STI data-bases.

EURONET. This packet-switched network, due to become operational in early 1979, is a joint project between the European Communities and the CEPT, the regional organization of some 20 European PTTs. When in full operation, it is expected to carry on-line STI traffic from the interrogation of over 80 data-bases and data-banks. Although in its first operational stage, use will be confined to the nine member states of the EEC, the EURONET management has already announced that it favours cooperation with other networks, and on the PTT side, it appears that this network is regarded as a prototype of a European international PTT-operated data network.

Use of Computer Networks for Technology Transfer to Developing Countries.

The direct use of this powerful information resource by developing countries is possible, but conditioned by possible solutions to a complex of interlinked problems. Clearly, an adequate telecommunications infrastructure must exist in the countries concerned to enable reliable linkages with existing networks to be established; while these linkages may be by international switched connections or by international leased circuits, in either case the local telecommunications situation is a determining factor in the practicability of obtaining reliable and reasonably error-free connections. It may be that such conditions exist in only a few major cities. Equally, the maintenance problem, both of telecommunications equipment and data terminals, to the required standards for reliable data transmission will depend on the availability of the necessary skilled manpower. Second, the costs of international leased circuits are very high, and can only in part be influenced by governmental action in the regions concerned. The cost of leasing a circuit from, for example, Europe to the Gulf States in the Middle East might amount to at least $100,000 per year, and this cost level is linked to the tariffs per minute of normal telephone connections, so that in either case the cost to the user may be prohibitively high. High international telecommunications costs are both a matter of economics (high capital costs, whether for cable, microwave or satellite links) but are probably equally due to the complexities of the international regulatory situation. For example, even on densely-used telecommunications routes such as those connecting North America and Europe, the extra cost, whether by private or hybrid public-private networks as in the case of European connections to TYMNET is very high. While a US user of TYMNET pays perhaps $5 to $7 per hour in communications charges without regard to distance, a European user will pay $20 to $40 per hour, depending on charging policies of the telecommunications administration in his country. International satellite links should in theory be cheap and almost totally distance-independent, but at present, expensive ground equipment is required and in practice, tariffs for international data traffic by satellite are geared to the rates for ground-based communication.

Action to reduce costs could be considered on three levels. First, a general increase in the flow of international data traffic to developing regions should have the effect of reducing the charges per data unit, so as to make it economically possible for private and commercial network operators to consider major extensions to their networks. However, this would seem to be a long-term solution to which the requirements in technology transfer would contribute but little in the near future. Second, joint action by regional bodies, governments, and national and international carriers could perhaps result in lower tariff as a matter of public policy. While European precedents may not be entirely applicable, the action by the Commission of the EEC and the CEPT in establishing relatively cheap rates for the use of EURONET (about $4 per hour, not including the local costs of access, as compared with between $20 and $30 per hour for the same type of service over a private network) is a hopeful sign. Probably however, the only immediately practicable solution to the cost problem is the direct subsidy to local centres to pay for the telecommunications costs involved.

Aside from the problem of costs, difficulties due to the lack of a telecommunications infrastructure able to support highly sophisticated forms of data communication could perhaps be mitigated by the use of simpler techniques. For example, the international telex network is expanding rapidly, not only in the industrialized countries, and local maintenance may not be such a major factor. While transmission rates are slow, interfacing telex and computer networks is entirely possible and in fact exists in several of the networks mentioned above.

In conclusion, while there exists an extremely effective means of documents selection and identification over practically the whole field of scientific and technical information for technology transfer, its direct use by centres in developing regions and countries is at present difficult. Its value in this respect depends upon pricing and technical factors, but above all, on the existence of both a telecommunications and information infrastructure at the receiving end; these infrastructure problems will be discussed in a wider context in the following chapter.

DOCUMENT SUPPLY SYSTEMS

Having identified documents which from their titles or abstracts or notation of contents, seem likely to be relevant to a problem, the user must then locate and obtain copies of the documents concerned. An elaborate machinery, which does not always work perfectly, has been established in industrialized countries for this purpose, and the aim of this section is to briefly outline its main features, and to discuss how it might be used in support of a technology transfer programme. It must again be stressed that, for the most part, the existing machinery is designed to deal with the formal information resource, i.e. journal articles, reports and monographs required by the research and development community. Know-how information, unless captured in particular report series, is not specifically catered for.

The Universal Availability of Publications Concept (UAP)

While the location and supply of documents of all kinds has been an essential task of libraries for many years, the design of standard systems on a national or regional basis, is now receiving intensive study by UNESCO and the International Federation of Library Associations (IFLA) under the UAP programme. The UAP concept may be regarded in some sense as the twin of Universal Bibliographic Control (UBC), since it endeavours to bring order and system into the location and supply areas as UBC has done in document identification. Bearing in mind the enormous quantity of potentially relevant written material, whether books, monographs, journal articles or reports, it would be clearly impossible for even the largest and best equipped library to maintain stocks of everything that is likely to be requested, and so one of the corner-stones of UAP is an effective interlibrary loan system, by which locations of particular works can be quickly identified and originals or copies supplied. Even in industrialized countries with highly developed inter-library loan systems it is often not possible to satisfy requests from the nationally available stocks, and thus international procedures and a degree of systems standardization internationally is required. There are several choices in the way in which UAP could be organized, ranging from total centralization on a regional basis to highly decentralized systems, perhaps on a subject or type of literature basis. Because of the many languages in which scientific and technical publication occurs, specialization of document supply centres on a language basis has often been suggested. Indeed, as most national library organizations in industrialized countries are also deposit libraries for publications appearing in that country, and therefore probably have the most complete collections, specialization on a language basis seems to be an essential ingredient in acquisition policy for UAP; problems arise in the case of languages such as English, which are used in non-English speaking countries as an international medium for dissemination of scientific results. The best organizational framework, suiting existing practices in the countries concerned, is still under active discussion. Obviously, the development of effective, fast and clearly understood systems for international location and supply of documents is of vital importance to developing countries, both as regards scientific and technical information generally, and in the informational back-up to technology transfer.

Location Problems

The first step in supply of documents must be the location of the original book, monograph or journal concerned. The most usual approach to this problem is the union catalogue method, in which for example, all available journal titles are listed with codings representing the library in which they are held. While this is relatively easy to achieve on a city, university, or even a provincial basis, the construction of a totally effective union catalogue on a national level, and its frequent updating, is a mammoth task in any industrialized country, and it is fair to say that nowhere has it been entirely satisfactorily solved. In some major libraries operating a national (or international) document delivery service, a number of catalogues, either by geographical area or by subject specialization, are used to ascertain whether they, or other affiliated libraries possess the desired publication. The British Library Lending Division operates on a different policy. It endeavours to keep in stock all items for which a demand can be expected. Over 80% of all demands can be satisfied from stock without recalls to listings or catalogues except to check incorrect citations. Recently, some national document delivery centres have made use of computer communications to assist in the location problem; requests for documents which cannot be satisfied nationally, or for which locations cannot be quickly established, are placed on a computer file which other national centres interrogate at frequent intervals; if they can locate and supply the document, they so annotate the file. Examples are given by the arrangements between the British Library Lending Division, the US National Library of Medicine, and other library organizations in the USA.

Problems in Document Supply

The most convenient way of supplying copies of articles, reports, etc. is by photocopying an original and mailing this to the requester. Even when requests can be identified and copies made on the day of receipt, the process is not very rapid. Within Europe a minimum of ten days is required for international requests, and for items causing some difficulty in location, the process may take weeks. Minicomputer processing of telex requests can shorten the period somewhat, but the speed of the process as a whole is mainly determined by the speed of the postal services in actual transmission of the document. The process of document supply can be considerably simplified by reducing the administrative and clerical routines involved in payment for document copies. The usual methods are deposit accounts and prepaid coupons, but even such methods may not be easily used by certain developing countries since payments will involve, to a greater or lesser extent, overcoming hard currency problems.

The use of facsimile and communication networks to deliver document copies virtually instantaneously, thus overcoming the postal delay problem, is still only a distant possibility in most industrialized countries. The techniques are within the state-of-the-art, but there are severe economic difficulties.

Mention must be made of the copyright problem which could restrict the progress made towards UAP in the coming years. In some countries, the existing copyright legislation permits the making of single copies of journal articles for the purpose of private study or research, the recipient undertaking not to make further copies from his copy; copies of entire works (e.g. books, monographs, and reviews) are not permitted. In other countries, licenses to photocopy are only granted if royalties are paid to a central clearing house or to the copyright owners; in other countries, the right to photocopy without royalties is questionable from a legal point of view, although photocopying for document delivery purposes is routinely carried out, pending clarification of the law. Overall, the opinion in the scientific and technical publishing world seems to be hardening against royalty-free photocopying, even by national document delivery centres, the argument being that widespread photocopying will jeopardize the existence of some scientific journals. If royalty systems are universally imposed, this could bring added difficulties to developing countries by cost increases, which will mostly be in hard currency, and may increase the administrative burden on document supply centres by requiring the introduction of more complex accounting methods, thus still further increasing the costs of document delivery.

THE ROLE OF INFORMATION DISSEMINATION MECHANISMS IN TECHNOLOGY TRANSFER

The identification, location and supply systems outlined in this chapter belong essentially to the world-wide system for the exchange of scientific and technical information relevant to research and development. In the present context they might be viewed as a series of tools which could be used in a technology transfer programme, rather than as technology transfer itself. The institutions concerned in the industrialized countries'end of the chain are services suppliers such as Lockheed and SDC in the USA, and DSA, SDS in Europe, and national libraries in science and technology and other major suppliers of document delivery services, such as NTIS in the USA, VINITI in the USSR, BLLD in the UK, CNRS in France, the Technische Informationsbibliothek in Hannover, FRG, CNR in Italy, and many others. At the developing countries' end, similar institutions will be involved, i.e. information centres and libraries. Thus, technology transfer centres, not necessarily the same as scientific and technical information centres, will probably find it most convenient to work with the local scientific and technical information infrastructure in the use of these series of tools for technology transfer purposes. The degree to which existing information dissemination machinery in industrialized regions can be used in support of technology transfer, is therefore closely related with the resources, including information and library personnel available for scientific and technical information programmes in the countries concerned.

For know-how information, other mechanisms for transfer could be considered. Industrial technology transfer institutions, such as research associations and the like, in industrialized countries could be regarded as nodes in an informal network, capable of direct information transfer to technology utilization and application centres in developing countries. If institutional and financial problems could be solved, for example by making it possible for such centres in developing countries to have some form of membership in these industrial institutions at low cost, direct transfer of know-how information could be accellerated. Insofar as communications problems not effectively dealt with by normal mail services might tend to inhibit the effectiveness of such transfer, relatively simple means of mechanisation have been shown to be cost-effective in this regard, for example, relatively inexpensive message switching and mail box systems for telex and telephone calls.

CHAPTER V

CONCLUSIONS, DISCUSSION AND RECOMMENDATION FOR FURTHER ACTION

GENERAL CONCLUSIONS

This chapter summarizes the main findings of the study on the nature and extent of the information resource in industrialized countries for technology transfer, and on this basis some general functional characteristics of possible technology transfer programmes will be discussed, since, as we have seen, the nature of the information resource itself is one of the determining factors. Unfortunately, there is as yet little specific information on the detailed requirements in developing countries, which will undoubtedly modify the way in which the functional elements of a possible programme are carried out. In any case, there is probably no single organizational pattern which will suit all regions in all areas of application. Nevertheless, the information is probably adequate to permit the discussion of possible alternative methods of structuring the programme.

Certain general problem areas can however be identified, and their impact on the development of the programme will be discussed. Finally, recommendations for further action will be derived based on the foregoing material.

The Bibliographic Resource

The main bibliographic information systems and data-bases form the basic stock of scientific and technical information and cannot be ignored in technology transfer. Of particular interest are the applied science and technology systems and subsets of discipline and interdisciplinary systems which the producers have designed for specific applications and purposes.

The resource is very large, there are probably some 2,000 abstract journals or their equivalent, and over 300 computer-readable data-bases, both of which can be viewed as guides to the location of relevant items of information. Since the total number of items referenced runs to several tens of millions, retrieval of those relevant to a particular problem area is only possible by use of the ordering structure built into printed and computer-readable data-bases (selections in terms of discipline or application areas), and the retrieval tools (printed indexes or on-line retrieval facilities, etc.), which are available.

Two main difficulties surround the use of the bibliographic resource in technology transfer. First, the resulting information does not provide "know-how". The end product is a set of scientific and technical documents, designed as a means of communication between research and development scientists and engineers, not as a direct means of transferring techniques to a possibly different environment. Second, bibliographic systems provide addresses to hard information, in the shape of references to articles and reports, etc., not the information itself. Its usefulness in providing actual information is therefore conditioned by the degree to which a second main component of the total scientific and technical information system, that of the location and supply of documents, is effective in the local environment. The following conclusions on the use of this part of the resource in technology transfer may therefore be drawn:-

1. Direct Use. Only rarely will it be possible to use the resource directly, to provide actual answers to problems in the field. In the long term however, technology transfer will depend upon a full scientific and technical information backup provided to centres of excellence, such as universities and research establishments. Therefore, improvement of STI services in universities and research centres in developing countries is basic to local technology transfer activities.

2. The Need for Repackaging. While part of the main bibliographic resource is already available in special problem- or application-oriented packages, there is in general a need to provide a repackaging interface between the scientific information specialist who is knowledgable in retrieving information and those who apply the information to achieve an actual

transfer of technology.

3. Balance. To achieve an effective use of the bibliographic resource, the system as a whole should provide for access to documents themselves, as well as the means of selecting those relevant to a problem.

The Industry-specific Resource

This part of the total information resource is as yet imperfectly identified. It is clear, however, that it constitutes an immediately usable and highly valuable information base for direct technology transfer. A number of national organizations having information transfer programmes in various industrial sectors, and of course, the UNIDO services, are engaged in matching these specific information requirements of industries by creating specialized collections of information which extend further than formal scientific and technical information.

Although the industry-specific resource will contain research and development reports and articles, the special collections of information and data will also include primary sources not normally included in research and development-oriented bibliographic collections. For example, trade newspapers, market surveys, and know-how information derived from experience in the field. The industry institutions concerned are fully aware of the fact that the provision of purely passive information, i.e. the circulation of documents, newsletters and so on, does not of itself achieve a transfer of technology. Consequently, many will develop their specialized information collections to provide an information back-up to question-answering and consultancy services which they perform for their membership. In addition, some will create a database, either in printed or machine-readable form, which can be consulted by users in much the same way as a normal bibliographic database in purely scientific and technical information. Thus, the resource has a double characteristic. Printed information having a greater know-how content than the bibliographic resource, and a wealth of experience in the application of techniques, i.e. a passive and an active component.

It may be concluded that:-

1. Direct Use. Both the active and the passive components of industry-specific systems can be used by information centres providing technology transfer information, and in some cases, directly by those responsible for technology transfer itself in developing countries. The institutions mostly responsible for the creation of the industry-specific resource are however mostly concerned with transfer of technology within industries in industrialized countries, and there may be problems in the relevance of their findings in other environments.

2. Availability. In the market economies, full access to the resource, including its active component, may require membership of the institution concerned, although the printed products are, to a greater or lesser extent, available on a normal subscription basis. In the socialist countries, the parallel institutions are ministries or state agencies, and access to the information would presumably require some form

of intergovernmental agreement.

The Special Information Resource

Several special information systems designed specifically for the transfer of negotiable technology have been identified. These include patent information systems (both commercial and intergovernmental), a reprocessed computer data-base to bring out innovations in the scientific and technical literature, a computerized information exchange system bringing together vendors and buyers of technology, and a mechanized system for quickly identifying items of equipment on sale which meet the users' requirements.

These systems have special uses in a technology transfer programme, and are already in use throughout the world. They are, however, rather sophisticated in design, and those available only over computer networks may not be immediately and directly useful in developing regions.

Distribution Systems and Networks

Industrialized countries have developed machinery for distribution of research and development results in two forms: first, machinery for the remote selection of relevant items in the main bibliographic resource, and second, systems for the location and supply of copies of the original documents themselves. The selection of relevant references by the use of remote terminals from collections of large numbers of computerized data-bases held on computers connected by a computer network is a relatively new development, but its use has expanded extremely rapidly in the last few years; by the end of 1979, it is likely that in North America and Europe alone, users will be carrying out over two million searches of the scientific and technical literature in this way. The possibilities for retrieving references relevant to a complicated problem in a half hours search, and the ability to choose from nearly 100 data-bases, irrespective of the location of the computer holding the data-base, is likely to bring into prominence the twin problems of locating the original documents and obtaining copies of them quickly. Location of original documents can be an expensive and time consuming task for a document supply centre, and while the major centres in industrialized countries can quickly supply copies of articles from journals they hold in stock, locating "difficult" journal articles may take weeks. Use of computer networks for this purpose may overcome this problem, but no immediate solution to the problem of postal delays, especially for international or intercontinental mail over long distances can be confidentally predicted.

Document identification, location, and supply is a vital part of the information backup for technology transfer. It is concluded that:-

1. Document Identification Using Computer Networks. While this is technically possible for some developing countries, they are penalized by the high cost of international intercontinental telecommunications; there may be difficulties also in inadequacies of the local telecommunications infrastructure,

and in maintenance facilities. Interfacing the international telex network with computer networks in industrialized regions may help, but no immediate solution, short of subsidizing data-links, can be seen for the cost problem.

2. Use of the Document Location and Supply Network. Many developing countries already use these facilities in industrialized countries, and an expansion and improvement of these facilities is clearly important in the development of a technology transfer programme. Outside the purely technical problems of improving response time and satisfaction rate, additional problems may be faced by developing countries in the shape of payment for document copies in hard currency, and in an increased cost due to changes in copyright practice and legislation which may involve royalties and/or leasing charges being passed on to users.

FUNCTIONS IN TECHNOLOGY TRANSFER

Background: User Requirements

The user requires technology transfer information at the strategic, or policy making level, at the technical and management level, and at the operative level. At each level, two streams of assessed information must be brought together: assessment of "external" technology (i.e., information on what has been done elsewhere), and assessment of the internal environment in which the technology is to be applied. The latter will require individuals with specific local knowledge and expertise and while assistance in this respect could conceivably be provided on a foreign-advisor basis, this function is specifically local in character. "Local" in this context can mean local to a particular country or to a particular region, depending on the circumstances. The information resource in industrialized countries has little to do with the fulfillment of this function; although clearly of the greatest importance in a technology transfer programme, we can only here note its existence, and emphasize that an effective programme cannot be constructed without making proper provision for it.

The external information stream is mainly seen as a contribution to technology transfer at the management and technical levels. The functions summarized below are therefore addressed to this aspect of the requirement as a whole.

Translation of Technology Needs into Information Requirements

This function implies an interfacing of local knowledge about the actual requirement, and any limiting conditions, and a knowledge of relevant information. Sources may be bibliographic data-bases, printed or machine-readable, specialised information from for example, the industry-specific resource, institutions or individuals. There appears to be no prima facie reason why parts of this function should not be distributed over the whole technology transfer network; certainly however, the key-sections of the interface must be located close enough to the end-user so that his needs and limitations are not lost sight of. In some cases, where there is a direct link between those responsible for planning and management in a particular industry in a developing country with an industrial technology transfer institution in an industrialized country, the translation of the user need into the information backup required, could possibly be carried out at the industrialized country end of the chain. In most cases however, a substantial part of this function will be carried out in the receiving country or region.

Source Location

To carry out the interfacing function just described, implies that somewhere in the technology transfer network, there is a system for identifying the sources. In industrialized countries, this is partly a matter of the use of information inventories of various kinds, and partly a matter of experience required by the personnel of information services. For a technology transfer programme oriented towards the needs of developing countries, it cannot be assumed that the necessary level of skill and experience will exist from the outset at the receiving end of the chain. Almost certainly therefore, new machinery for assistance with source identification will be required, if receiving institutions are not to depend solely on foreign experience (which may not always be relevant) to carry out this function on their behalf. Only fragments of this machinery appears to exist at the present time.

Retrieval and Supply

Once sources have been identified, relevant information must be retrieved, and this implies not only retrieval of literature references, but also supply of the original documents to which these give addresses. In some cases, source location could automatically be followed by retrieval of the basic information required, particularly when this source is an individual or an institution concerned with the particular problems faced by the inquirer. The technology transfer network as a whole however, must make provision for the assessment of likely sources in terms of their practical relevance to the problem faced by those responsible for technology transfer at the receiving end.

Translation of Information Transfer into Technology Transfer

The information received must form the basis of local action to achieve a transfer of technology. This will almost certainly involve a substantial element of repackaging, since unless the information is purely know-how information in exactly the right form for use in the local environment, it cannot be passively passed on to users in the hope that they will directly apply it. The fulfillment of this function therefore implies the same kind of local expertise in matching problems and information as was noted at the beginning of this section as a basic element in the technology transfer process. It also follows, at the implementation stage, that all kinds of other resources outside the information field will be required, i.e., education and training facilities to bridge the gap between know-how and its implementation, that is, the show-how element in technology transfer.

Information Transfer and Technology Transfer

The above remarks lead to the need to distinguish between information transfer functions and technology transfer functions in the system as a whole. Information transfer in support of technology transfer may be viewed as a special case of the exchange of scientific and technical results, while the latter demands a different kind of organization capable of interpreting information in the light of local needs and limitations and providing suitable machinery for implementation, both functions are interdependent. If there is an insufficient information infrastructure to deal effectively with the information transfer function, local technology transfer centres will have to rely totally on foreign sources for ready-made information packages; if the infrastructure for translating needs for technology into information requirements is inadequate, it is doubtful whether even the most skilled information personnel could do more than supply passive information which they think might be relevant. It has already been noted that certain functions in information transfer may be distributed along the chain, especially in the early stages of a programme, but in the end, an effective programme depends crucially on the building up of an effective scientific and technical information infrastructure and a technology transfer infrastructure at the user end of the chain.

POSSIBLE ORGANIZATIONAL STRUCTURES IN SUMMARY

The nature of the information resource, and the functions required in an ongoing technology transfer programme, suggest a spectrum of possible organizational models for a UN-sponsored technology transfer activity. At one end of the spectrum it is possible to conceive of a totally centralized system in which a UN Executive Organization has a global responsibility for all aspects, from the establishment of local and regional centres, the training of specialists, the recruitment of consultants, source location and information processing, etc. etc. A monolythic structure of this kind would be extremely expensive and would duplicate functions which are already being carried cut, to a greater or lesser extent, in existing UN programmes and in the private sector. For these and other reasons, such a model can be dismissed. At the opposite end of the spectrum a total laissez-faire model, in which nothing is added to existing activities, may probably also be dismissed. The studies by the regional economic commissions demonstrate that something more is required.

It seems clear that the most appropriate models embody a mixture of centralization and decentralization, but the appropriate balance between them may be different, both in terms of different regions and different information needs; it will also change with time, as the programme develops. During the early stages, particular developing countries may require immediate assistance with the establishment of technology transfer and information transfer centres, and for this, some form of central organization to coordinate these needs with available expertise in the industrialized countries would be appropriate. At a later stage, when these activities at the local level were operational, the centralized services could be reduced in scale: local centres would have established their own linkages through which information and expertise would flow as required. Thus, the organizational structure of centralized activities should be flexible and be able to serve the various different types of local organization which may be found appropriate. For example, in some areas, the needs and the educational and cultural environment may be so similar in a number of neighbouring countries that these countries may opt for an infrastructure with the emphasis at the regional level, rather than the national. In other areas, the reverse is likely to be the case. In some developing countries, it may be appropriate to locally subdivide the functions of a technology transfer centre into areas corresponding to specific industrial or agricultural interests; in others, a single centre may be the best solution. Any UN facility which may be established in furtherance of a technology transfer programme must be able to serve a wide variety of organizational patterns at the local level.

Workable organizational models must take into account the two interdependent requirements of the programme as a whole, information transfer and technology transfer, and the establishment of effective local infrastructures. In the transfer of information, two different organizational approaches are possible, the first concentrating on machinery for building-up local information services and facilities, and the second on the supply of actual technology-relevant information and expertise. It is suggested that both approaches are necessary.

Possible Central Activities

Aside from such basic activities as assistance with infrastructure problems, funding, any necessary inter-UN-Agency coordination etc., there appear to be certain activities which could be carried out with advantage by any central body which might be established within the UN family of organizations to manage a technology transfer programme. These include:-

- brokerage services to put local information centres in touch with possible sources (ranging from individuals and institutions to information service suppliers, and document supply organizations).
- Source exploitation and repackaging of information may be necessary on a central basis when the local infrastructure is inadequate to take advantage of the brokerage services noted above.
- Coordination and assistance with training schemes for technology information specialists may also be considered as a central function. In some cases, this will be purely a brokerage function, in matching needs for training interface personnel with facilities offered by industrial information centres in industrialized countries, but an active training programme,

involving funding for travel, etc., may also be required.

RECOMMENDATIONS FOR FURTHER ACTION

Decisions on the scope, content and organization of a UN-sponsored technology transfer programme will depend on many major factors outside the scope of this report, including particularly the possible level of international funding which might be allocated to it and the degree of executive involvement of the UN system considered appropriate. These recommendations are therefore confined to matters arising from the present study on the available information resource, and do not imply any specific decisions on the larger issues.

Feasibility of a Source Location System

The present study has shown that possible sources of information are so numerous and so widespread that the construction of a complete inventory of data-bases, institutions and contact points would require a major institutional effort and continued expenditure if it is to be kept up-to-date. A source inventory, while a primary tool for technology transfer centres, must be searchable using criteria based on relative relevance to a particular problem. There are several ongoing information directory activities in industrialized countries, some of which are machine-readable, but the degree to which these will provide assessed source location information to the extent necessary in a UN programme is not clear. Therefore, it is recommended that a feasibility study be carried out to determine to what extent, if any, these need to be supplemented by a UN-sponsored activity, and the relative cost-effectiveness of possible alternatives. This study must, of course, take full account of the work done by the UNIDO Industrial Information Service.

Use of Informatics Technology at the Local Level

The study has shown that in the area of information retrieval, and possibly for document location, the use of modern computer-telecommunications systems could be of great help to developing countries in information transfer leading to technology transfer, but there are many factors which are as yet unclear. Some of the barriers to application of informatics can be stated, for example, present costs and the ability of the local telecommunications systems to support data traffic. However, present information is insufficient to assess the possibility of overcoming these barriers. There may be particular benefits in using informatics for special requirements, for example in locating sources by use of informatics rather than conventional means of communication. It is therefore recommended that specific studies be carried out in this area, to supplement the more general studies of international data flow and informatics applications already published. These studies might be on a hypothetical case study basis taking into account the situation in particular countries or regions.

Barriers to Information Transfer

Barriers to information transfer, such as educational and infrastructure difficulties, costs, and several others have been noted in the course of this study. However, no systematic information seems to be available on the actual degree to which these barriers effect the technology transfer process, and on the possibility and cost of removing them. For example, is language really a barrier and if so, at what level, (management/information personnel or operative)? There are clearly cost and hard currency problems to be overcome in using existing industrialized-nation information resources, but it is not clear whether this is a higher priority for international funds than for example the support of special training schemes for information and technology transfer personnel. Therefore, it is recommended that a systematic study of the barriers to information transfer be carried out, to provide a factural basis on which funding requirements can be better assessed.

BIBLIOGRAPHIC SYSTEMS:

GENERAL SCIENCES BY DISCIPLINE

In this Annex are listed discipline-oriented information bases and systems in the basic sciences (see Annex III for applied science and mission-oriented systems).

The material is divided into the following sections:

I-A Biology

I-B Chemistry

I-C Physics including electronics and computer science.

Note: Many of the multidisciplinary systems in Annex II include sub-systems covering these subject areas. Details given, including numbers of items, are believed to be approximately correct as of December 1977.

A. Biology

B. Chemistry

C. General Physics

I-A BIOLOGY

THE BIOSIS SYSTEM

Name(s): Biological Abstracts/Biosis Previews/BioResearch Index

Producer: Biosciences Information Service, Philadelphia, USA

Scope, Coverage and Size: Entire life sciences including microbiology, plant and animal sciences, experimental medicine, agriculture, pharmacology, ecology, biochemistry, bioengineering, biophysics. Users are information centres and technical libraries providing services to scientists working in the life sciences. Database is over 1.6 million items in size, with an estimated growth rate of 240,000 items per year.

Products: Abstract journals, indexes, computer tapes.

Database Services: On-line search services available from CISTI, DIMDI, Lockheed Information Systems, BRS.

Batch Processing/SDI services available from producer, ANSTEL; BMDC; CISTI; CSIR; CSIRO; DIMDI; GIDC; UKCIS; Union Carbide Nuclear Division;

Availability: Printed and tape versions available on subscription basis from producer. Interactive interrogation of database available over TYMNET and Telenet, planned for EURONET.

I-B CHEMISTRY

CHEMICAL ABSTRACTS SERVICES

C.A.S. produces a printed version of its main database, Chemical Abstracts (CA). The material entering CA is also produced in machine-readable form as CA Condensates, and there are many other specialised products derived from the basic database in both printed and machine-readable forms. The whole makes up the Chemical Abstracts Services; brief notes on each separate sub-system are grouped below by names of the sub-systems.

Producer

Chemical Abstracts Services, Columbus, Ohio, U.S.A.
(additional distributors in Germany and the U.K.)

Availability

All elements in the total system (both printed and machine-readable versions) are available on a subscription basis.

Note: Two additional services derived from CA material but not produced by CAS are available. They are:-

Chemical Name Dictionary
CA Index

These are regarded as separate services and are listed at the end of the CAS entries.

CACON

Name(s): CACon/CA Condensates

Scope, Coverage and Size: Worldwide coverage of chemistry and chemical engineering. Users are researchers in all areas related to chemistry and chemical engineering. Database is over 2 million items in size, with an estimated growth rate of 387,000 items per year.

Database Services: On-line search services available from ESA; Lockheed Information Systems; NOCI; System Development Corporation;

Batch searching available from AFDAC; ARAC; BMDC; CIDB; CISTI; CSC; CSIR; DTB; GIDC; IFP; IPC; IU CIC; KASC; NC/STRC; NERAC; Northwestern; RIT; UKCIS; UVTEI-UTZ;

Interactive interrogation of database available over TYMNET, Telenet, ESANET, and planned for EURONET.

CAISF

Names: CAISF, CA Integrated Subject File

Scope, Coverage and Size: Volume Index entries for Chemical Abstracts, divided into two parts: Part A contains all Chemical Substance Index entries; Part B contains all General Subject Index entries. Users are researchers in all areas related to chemistry and chemical engineering: CAIFS is a tool for retrospective searching of the chemical literature. Database is about 3 million with an anticipated growth rate of 387,000 items per year.

Database Services: CAS will provide to the requestor a CAS Registry Number for each unambiguously described chemical substance identified by the requestor and currently present in the CAS Chemical Registry system.

CASIA

Names: CASIA, CA Subject Index Alert

Scope, Coverage and Size: A current awareness data file that contains Volume Index entries for Chemical Abstracts. Users are researchers in all areas related to chemistry and chemical engineering and CASIA is a tool to aid current awareness services. Database is about 3 million items in size, with an estimated growth rate of 387,000 items per year.

Database Services: On-line search services available from Lockheed Information Systems. Interactive interrogation of database available over TYMNET and Telenet. CAS will provide to the requestor a CAS Chemical Registry Number of each unambiguously described chemical substance identified by the requestor and currently presented in the CAS Registry System.

CASSI

Names: CASSI/Chemical Abstracts Service Source Index

Scope, Coverage and Size: Bibliographic citations and document locating information for original source literature of chemistry and chemical engineering. Users are individuals who must locate and/or reference the original source literature. Database is about 65,000 items in size with an estimated growth rate of 5,000 items per year.

Database Services: None

CBAC

Names: CBAC/Chemical-Biological Activities

Scope, Coverage and Size: Worldwide coverage of literature reporting interactions of chemical substances with biological systems in vivo and in vitro as well as pharmacological and pharmaceutical techniques for observing such interactions. Users are information centres and technical libraries serving researchers in life sciences. Database is about 290,000 items in size, with an estimated growth rate of 47,300 items per year.

Database Services: On-line search services available from NLM. Batch searching available from BMDC; GIDC; IFP; UKCIS. CAS will provide to the requestor a CAS Registry Number for each unambiguously described chemical substance identified by the requestor and currently present in the CAS Chemical Registry System.

CIN

Names: CIN/Chemical Industry Notes

Scope, Coverage and Size: Current and worldwide coverage of the key chemical trade and industry periodicals. Users are decision-makers involved in management, investment, marketing, and production in the chemical-related industries. Database is about 95,000 items in size, with an estimated growth of 50,000 items per year.

Database Services: On-line search services are available from Lockheed Information Systems. Interactive interrogation of database available over TYMNET and Telenet.

CT

Names: CT/ Chemical Titles

Scope, Coverage and Size: Current awareness service that reports the titles of selected papers of chemical interest. Users are researchers in all areas of chemistry and chemical engineering. Database is about 1.8 million items in size with an estimated growth of 148,000 items per year.

Database Services: Batch searching available from AWRE; BMDC; CISTI; DTB; GIDC; IFP; KASC; MIC; NC/STR; NOCI; U of Iowa; UKCIS. CAS will provide to the requestor a CAS Registry Number for each unambiguously described chemical substance identified by the requestor and currently present in the CAS Registry System.

ECOLOGY AND ENVIRONMENT

Name: Ecology and Environment

Scope, Coverage and Size: Chemical and chemical engineering aspects of ecology and environment. Users are researchers in all areas related to chemical and chemical engineering aspects of ecology and environment. Database is 84,200 items in size with an estimated growth of 43,200 items per year.

Database Services: CAS will provide to the requestor a CAS Chemical Registry Number for each unambiguously described chemical substance identified by the requestor and currently present in the CAS Chemical Registry System.

FOOD AND AGRICULTURAL CHEMISTRY

Name: Food and Agricultural Chemistry

Scope, Coverage and Size: Chemical aspects of food production, preparation, preservation, and consumption including fermentation and nutritional studies, and agricultural and soil chemistry. Users are researchers in all areas related to chemical aspects of food production, preparation, preservation, and consumption including fermentation and nutritional studies, and agricultural and soil chemistry. Database is about 68,000 items in size, with an estimated growth rate of 33,900 items per year.

Database Services: CAS will provide to the requestor a CAS Chemical Registry Number for each unambiguously described chemical substance identified by the requestor and currently present in the CAS Chemical Registry System.

MATERIALS

Name: Materials

Scope, Coverage and Size: Chemical and chemical engineering aspects of the production, properties, and applications of industrially important materials. Users are researchers in all areas related to chemical and chemical engineering aspects of the production, properties, and application of industrially important materials. Database is about 160,000 items in size, with an estimated growth rate of 82,200 items per year.

Database Services: CAS will provide to the requestor a CAS Chemical Registry Number for each unambiguously described chemical substance identified by the requestor and currently present in the CAS Registry System.

POST

Names: Post/Polymer Science and Technology

Scope, Coverage and Size: Worldwide coverage of the current scientific and technical literature related to macromolecular chemistry. Users are researchers in all areas of macromolecular chemistry. Database is about 310,000 items in size, with an estimated growth rate of 46,400 items per year.

Database Services: Batch searching is available from AFDAC; CSC; IFP; NOCI; RIT; UKCIS. CAS will provide to the requestor a CAS Registry Number for each unambiguously described chemical substance identified by the requestor and currently present in the CAS Chemical Registry System.

PATENT CONCORDANCE

Names: Patent Concordance in Computer-Readable Form/Patent Concordance

Scope, Coverage and Size: Correlates patents issued by different countries for the same basic invention. Newly published patents which correspond to a patent for which an abstract has been published previously in Chemical Abstracts are not abstracted a second time. They are linked by number and issuing country to the first CS abstract number. Users are researchers in all areas of chemistry and chemical engineering. Database is about 480,000 items in size, with an estimated growth rate of 67,600 items per year.

Database Services: None

CHEMICAL NAME DICTIONARY

Name: CA Chemical Name Dictionary, a merged database from CASIA and Chemical Abstracts Index Guide

Producer: Lockheed Information Systems, Palo Alto, California USA

Scope, Coverage and Size: CAS chemical identifiers for chemical compounds appearing in CA Subject Index Alert since January 1973. The database is initially 250,000 items in size with an anticipated growth rate of 200,000 - 300,000 items per year.

Database Services: On-line search services available from the producer. Batch searching will also be available from the producer.

Availability:

CA INDEX

Name: CA Index (Note: CA Index is a subset database from the CA General Subject Index portion of CASIA).

Producer: Lockheed Information Systems, Palo Alto, California, USA.

Scope, Coverage and Size: CA General Subject Indexes appearing in CASIA since January 1973.

Database Services: On-line search available from Lockheed Information Systems. Batch search will also be available from Lockheed Information Systems.

Availability:

CHEMICAL MARKET ABSTRACTS

Names: CMA/ Chemical Market Abstracts

Producers: **PREDICASTS**, Inc., Cleveland, Ohio, USA

Scope, Coverage and Size: Worldwide coverage and digests of all significant literature pertaining to the chemical process industries. Users are managers, researchers working in areas related to the economics and management of chemical process industries. Database is about 56,000 items in size, with an estimated growth rate of 14,000 items per year.

Products: Printed and computer tape versions of the databases.

Database Services: On-line search is available from Lockheed Information Systems. Batch searching available from the producer and other centers. PREDICASTS provides special bibliographies and current awareness services such as World Studies, Predicasts Industry Studies, Custom Market Extract Reports, and PREDI-BRIEFS.

Availability: By special arrangement with producer. Interactive interrogation of database over TYMNET and Telenet.

ENERGY

Name: Energy

Scope, Coverage and Size: Chemical and chemical engineering aspects of energy sources, production, and technology--worldwide coverage. Users are researchers in all areas related to chemical and chemical engineering aspects of energy sources, production, technology. Database is about 77,000 items in size, with an estimated growth rate of 39,000 items per year.

Database Services: CAS will provide to the requestor a CAS Chemical Registry Number for each unambiguously described chemical substance identified by the requestor and currently present in the CAS Chemical Registry System.

CRYSTALLOGRAPHIC DATA STRUCTURAL

Names: Crystallographic Data Structural/Crystallographic Data Centre Structural Data File (Note: a companion file, the Crystallographic Data Centre Bibliographic File, provides complete bibliographic citations), corresponding to Molecular Structures and Dimensions, Vol. A1, Interatomatic Distances 1960-65,Organic and Organometallic Crystal Structures.

Producer: Crystallographic Data Centre, Cambridge, England

Scope, Coverage and Size: Numerical data from x-ray and neutron diffraction studies of organic and organometallic compounds excluding proteins and high polymers. Users are chemists and crystallographers. The database is about 11,500 items in size.

Products: Machine-readable database

Database Services: A modified version of this database is planned for on-line access via the Cyphernetics time-sharing network. Batch searching available from producer.

Availability:

CRYSTALLOGRAPHIC DATA BIBLIOGRAPHY

Names: Crystallographic Data Bibl/Crystallographic Data Centre Bibliographic File. A companion file, the Crystallographic Data Centre Structural Data File, provides evaluated crystallographic data.

Producer: Crystallographic Data Centre, Cambridge, England

Scope, Coverage and Size: Crystal structures of organic and organometallic compounds analysed by x-ray or neutron diffraction methods. Users are chemists and crystallographers. Database is 15,000 items in size, with an estimated growth rate of 2,000 items per year.

Products: Machine-readable database with correspondence to Molecular Structures and Dimensions, Vol.1, 1935-

Database Services: Batch searching available from producer; an on-line version is planned. Current awareness and retrospective search services provided by producer.

Availability: Machine-readable database is available on a subscription basis. Regional Centre is entrusted with complete database which should not be copied in its entirety and distributed without Centre approval.

INDEX CHEMICUS REGISTRY SYSTEM

Name: Index Chemicus Registry System (corresponding to Current Abstracts of Chemistry and Index Chemicus, Chemical Substructure Index, 1970+, and ICRS 1966-70.

Producer: Institute for Scientific Information, ISI, Philadelphia, Pennsylvania, USA.

Scope, Coverage and Size: Worldwide coverage of the literature on the synthesis and application of organic chemical compounds. Users are researchers and scientists concerned with synthesis and/or testing of organic compounds. Database is about 170,000 items in size, with an estimated growth rate of 15,000 items per year.

Database Services: Batch searching is available from the producer and other centres.

Availability: Computer file may be leased under annual subscription basis. Not available for commercial exploration.

INTERNATIONAL DOCUMENTATION IN CHEMISTRY

Names: International Documentation in Chemistry/IDC

Producer: Internationale Dokumentationsgesellschaft für Chemie, Frankfurt, Germany

Scope, Coverage and Size: Low molecular weight organic chemistry; polymer chemistry; input from journal articles, other secondary services, etc. IDC specialises in chemical patent literature. The present size of the database being about 3 million items. There are linked files on bibliographic descriptions, structural elements, reactions, etc. Users are major chemical companies in Germany, who are shareholders in IDC. Foreign membership is also possible.

Product: Machine-readable database only, which may be made available to member firms, but is usually searched by IDC on their behalf.

Database Services:

Batch searches on bibliographic descriptions, structural elements, reactions, patents and patent families are performed by the producer for IDC membership; alternatively, tape copies of the sections of the database and associated software can be supplied.

Availability: Searches for non-IDC members can be carried out against repayment.

CHEMINFORM-ORGANIC

Name: Cheminform-Organic

Producer: Internationale Dokumentationsgesellschaft für Chemie, Frankfurt/Main, West Germany

Scope, Coverage and Size: Covers the literature of organic chemistry

Products: Computer version of database

Database Services:

Availability:

CHEMINFORM-INORGANIC

Name: ChemInform-Inorganic

Producer: Chemie-Information und-Dokumentation, Berlin, FRG

Scope, Coverage and Size: Covers the journal literature related to inorganic chemistry

Products: Computer version of Database

Database Services:

Availability:

I-C. GENERAL PHYSICS

including Electronics, Computer Science, etc.

The databases included in this section are those concerned with physics and sub-disciplines. However, where the emphasis is more on applied disciplines, e.g. nuclear science and technology, it is listed in Annex IV rather than here.

Reference should also be made to Interdisciplinary Databases in Annex III

INTERNATIONAL INFORMATION SERVICES IN PHYSICS, ELECTROTECHNOLOGY, COMPUTERS AND CONTROL

Names: INSPEC/International Information Services in Physics, Electrotechnology, Computers and Control. INSPEC consists of three databases, each in machine-readable form and printed versions: Inspec A corresponding to Physics Abstracts, 1969+; Inspec B corresponding to Electrical and Electronics Abstracts, 1969+; Inspec C corresponding to Computer and Control Abstracts, 1969+.

Producer: Institution of Electrical Engineers, London, England

Scope, Coverage and Size: Worldwide coverage of literature related to physics, electrical and electronics engineering, computers and control engineering, and mechanical engineering. Users are scientists, researchers and managers working in areas related to physics, electrical and electronics engineering, computers and control engineering, and mechanical engineering. Database is about 1 million items in size, with an estimated growth rate of 100,000 items per year.

Products: Abstract journals, computer databases, current awareness, etc.

Database Services: On-line search is available from producer; ESA; Lockheed Information Systems; and CAN/OLF; batch searching available from producer; AWRE; CISTI; COSTI; CSIR; DTB; GIDC; NERAC; RIT; UVTEI-UTZ. Weekly current awareness service is also available as well as monthly standard profiles.

Availability: All products are available on subscription/lease basis. Interactive interrogation of database over ESANET, TYMNET, Telenet and planned for EURONET.

SEARCHABLE PHYSICS INFORMATION NOTES

Names: SPIN/Searchable Physics Information Notices corresponding to Current Physics Index, 1974.

Producer: American Institute of Physics, New York, NY, USA

Scope, Coverage and Size: Approximately one third of the world's physics and astronomy journal literature. This includes all journal articles published by AIP. Users are physical scientists and engineers. Database is about 175,000 items in size, with an estimated growth rate of 20,000 items per year.

Products: Machine-readable database and index journal.

Database Services: Batch searching available over NERAC University of Texas and WRISC. Current Physics Microform provides full text of articles retrieved from SPIN. SPIN tape citations include reel and frame numbers corresponding to the microfilm.

Availability: Subscription basis.

OTHER DATA-BASES IN PURE SCIENCE

There are many data-bases in highly specialized areas of science not described above. For example:-

Gas Chromatography (Illinois, USA)

Mass Spectrometry Bulletin (Reading, UK)

Mass Spectroscopy Literature (Ames, Iowa, USA)

Nuclear Magnetic Resonance Literature Retrieval System (Bethesda, MY, USA, and Niles, IL, USA)

Thermophysical Properties Research Center (West Lafayette, Indiana, USA)

THERMO DATA (Thermodynamic Properties of Chemical Compounds), (Grenoble, Switzerland)

E.P.I.C. (Physical and Thermodynamic Properties of Compounds), Liege, Belgium.

International Review of the Complete Hydrobiology (Berlin, GDR)

New Publications - Chemistry (Prague, CSSR)

New Publications - Biology (Prague, CSSR)

Geography and Geophysics (GEOREF) and Meteorology

(Meteorology and Geophysical Abstracts have also been excluded).

BIBLIOGRAPHIC SYSTEMS:

MULTIDISCIPLINARY SYSTEMS

In this Annex are grouped the main information systems which are multidisciplinary or interdisciplinary in character. They include STI databases which are collections by type of information, e.g., current research programmes, dissertations, etc., but also collections of sub-systems each of which is discipline--or mission-oriented, which are uniform in character and organised to form a total information system, such as PASCAL.

Not included in this Annex are mission-or applications oriented systems, such as those in aerospace or atomic energy, which have an interdisciplinary character. These will be found in Annex III.

Note: Details given, including numbers of items, are believed to be approximately correct as of December 1977.

BELL AND HOWELL TRANSDEX

Names: Bell & Howell TRANSDEX (corresponding to TRANSDEX Index, 1970+)

Producer: Micro Photo Division of Bell & Howell, Wooster, Ohio, USA

Scope, Coverage and Size: Covers the translations of the US Joint Publications Research Service which include scientific, technical, political and sociological documents. Database is about 300,000 items in size with an estimated growth rate of 50,000 items per year.

Products: Machine-readable database corresponding to printed index journal

Database Services: On-line searching available from producer

Availability: Database is available from producer under special arrangements.

COMPREHENSIVE DISSERTATION INDEX

Names: CDI/Comprehensive Dissertation Index

Producer: Xerox University Microfilms, Ann Arbor, Michigan, USA

Scope, Coverage and Size: Citations of doctoral dissertations for degrees granted from 1861 to present in the US and Canada. Database is about 560,000 items in size, with an estimated growth rate of 39,000 items per year.

Products: Machine-readable database, printed index journal

Database Services: On-line searching available from Lockheed Information Systems. Batch searching available from producer.

Availability: Database available for lease/purchase under special arrangements with producer. Interactive retrieval from database over TYMNET and Telenet.

CURRENT PROGRAMS

Names: Current Programs

Note: The corresponding hardcopy source also includes two separately published indexes: Quarterly Index to Current Programs and Annual Index to Current Programs. Both indexes include keyword, author name and date of meeting indexes as well as a main entry index.

Producer: World Meetings Information Center, Inc., Chestnut Hill, Massachusetts, USA

Distributor: Macmillan, New York, USA

Scope, Coverage and Size: Papers presented at scientific and technical meetings covering life sciences, physical sciences, engineering and medicine. Users are individual contributers and reference librarians in the areas mentioned. Database is about 475,000 items in size, with an estimated growth rate of 120,000 items per year.

Products: Machine-readable database, and printed index journal.

Database Services:

Availability: Database available under leasing arrangement.

HUNGARIAN TECHNICAL ABSTRACTS

Periodical of the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary;

Abstracts of Selected Hungarian Scientific and Technical Papers, Budapest, Hungary;

both published quarterly in English, Russian, and German.

INFORMATION EXCHANGE CENTER

Name: Information Exchange Center corresponding to Information Exchange Center KWOC Index and Project Descriptions

Producer: Canada Institute for Scientific and Technical Information, Ottawa, Canada

Scope, Coverage and Size: Provides an inventory of on-going research at Canadian universities.

Database is about 10,000 items in size.

Products: Machine-readable database and printed indexes.

Database Services: On-line and SDI services performed by producer

Availability: Computer database not commercially available. Search services available to users of CAN/OLE and CAN/SDI information services.

INDEX TO SCIENTIFIC REVIEWS

Names: ISR/Index to Scientific Reviews corresponding to Index to Scientific Reviews, 1974

Producer: Institute for Scientific Information, Philadelphia Pennsylvania, USA.

Scope, Coverage and Size: Significant review articles published throughout the world on any subject in science. Users are students, researchers, educators in need of quick reviews of subjects. Database is about 32,000 items in size with an estimated growth rate of 16,000 items per year.

Products: Computer searches of machine-readable database corresponding to printed index.

Database Services: Batch searching available from producer.

Availability: ISI is considering the possibility of making the machine-readable database available commercially.

MARC - MACHINE-READABLE CATALOGING (Books)

Names: MARC(books)/MAchine Readable Cataloging (books)

Producer: MARC Development Office, Washington, D.C., U.S.A.

Distributor: Cataloging Distribution Service Division, Library of Congress, Washington, D.C., USA

Scope, Coverage and Size: Includes books in all subjects collected by L.C. in English, 1968-present; French, 1973-present; and German, 1975-present. Users are libraries, library networks and other organizations dealing with library materials. Database is about 711,000 items in size, with an estimated growth rate of 114,000 items per year.

Product: Machine-readable database

Database Services: On-line searching available over OCLC; batch searching available from producer; CISTI; MIC

Availability: Database available for purchase from producer

MARC - MACHINE READABLE CATALOGING (SERIALS)

Names: MARC(Serials)/MAchine Readable Cataloging (serials)

Producer: MARC Development Office, Washington, D.C., USA

Distributor: Cataloging Distribution Service Division, Washinton, D.C., USA

Scope, Coverage and Size: Includes all serials in all Roman and non-Roman alphabet languages with non-Roman alphabet languages being carried in a Romanized form, that are currently cataloged or currently re-cataloged by the Library of Congress. Users are libraries, library networks and other organizations dealing with library materials. Database is about 34,000 items in size, with an estimated growth rate of 10,000 - 20,000 items per year.

Product: Machine-readable database.

Database Services: On-line searching available over OCLC; batch searching available from producer

Availability: Database available for purchase from producer.

NATIONAL REFERRAL CENTER MASTER FILE

Names: NRCM/National Referral Center Master File

Producer: National Referral Center, Washington, D.C., USA

Scope, Coverage and Size: Covers information concerning organizations which are information resources in science, technology, and social sciences. Users are those seeking general information in the sciences. Database is about 2,500 items in size with an estimated growth rate of 1,400 items per year.

Product: Machine-readable database

Database Services: On-line searching available from producer.

Availability: Database not commercially available. On-line terminals accessing the NRC database provide services for congressional offices and the Library of Congress. The public may access the NRCM database via a terminal in the Science Reading Room of the National Referral Center.

NTIS BIBLIOGRAPHIC DATA FILE

Name: National Technical Information Service Bibliographic Data File, corresponding to Government Reports Announcement

Producer: National Technical Information Service, Springfield, Virginia, USA

Scope, Coverage and size: Multidisciplinary coverage of technical reports generated by US Government-sponsored research. Users are private citizens, academic and industrial community, special libraries, contractors, Government Agencies. Database is about 420,000 items in size with an estimated growth rate of 60,000 items per year.

Products: Machine-readable database and printed announcement journal.

Database Services: On-line searching available from Lockheed Information Systems; System Development Corporation; European Space Agency. Batch search available from producer; ADSATIS; ARAC; CISTI; GIDC; ISU Comp Center; KASC; MIC; NC/STRC; NERAC; Northwestern; RIT; WESRAC.

Availability: Database may be leased from producer for use within lessor's own organization. Interactive retrieval services available over TYMNET, Telenet, ESANET and planned for EURONET.

THE PASCAL SYSTEM

The PASCAL System covers all branches of the physical, biological and human sciences. There are some 27 separate subject- or mission-oriented databases, each appearing in identical printed and machine-readable forms (Bulletins Signalétiques) and PASCAL computer tapes. Thesauri are linked and the machine-readable versions have a common software system.

Names: PASCAL/Programme Appliqué à la Compilation Automatique de la Littérature, corresponding to Bulletin Signalétique.

Producer: Centre National de la Recherche Scientifique, Paris, France.

Scope, Coverage and Size:

PASCAL 101 - Information Science, Documentation
" 110 - Computer Science, Operational Research, Management
" 120 - Astronomy, Space Physics, Geophysics
" 130 - Physics
" 140 - Electrotechnics
" 145 - Electronics
" 160 - Solid State Physics
" 161 - Crystallography
" 165 - Atoms and Molecules, Plasmas
" 170 - Chemistry
" 310 - Biomedical Engineering and Computer Science

PASCAL 320 - Biochemistry, Biophysics
" 330 - Pharmacology, Toxicology
" 340 - Microbiology, Virology, Immunology
" 360 - Animal Biology
" 363 - Genetics
" 365 - Vertebrate Physiology
" 370 - Plant Biology and Physiology
" 380 - Agronomy, Zootechny, Phytopathology, Food Science
" 730 - Fuels, Energy
" 740 - Metals, Metallurgy
" 745 - Welding, Brazing and Welding Technology
" 780 - Polymers
" 880 - Chemical Engineering, Chemical Industry
" 890 - Mechanical Engineering, Buildings and Civil Engineering, Transportation
" 900 - Translations
" 920 - Earth Science

The total annual update of the system as a whole amounts to about 0.5 million items per year.

Products: Machine-readable databases and announcement bulletins in each of the subject areas listed above.

Database Services: On-line search services on aerospace items available from European Space Agency. Batch processing/SDI services available from producer.

Availability: Databases may be leased. Interactive interrogation (aerospace subjects) available over ESANET; planned (all subject areas) for EURONET.

POLISH TECHNICAL AND ECONOMICAL ABSTRACTS

published quarterly (in English).

(Warsaw, Poland).

POLISH TECHNICAL REVIEW

published six times a year (in English).

(Warsaw, Poland).

REFERATIVNY ŽURNAL

This information system of abstract journals in science and technology comprises well over a million abstracts drawn from a coverage of 21,000 journals and monographs. Also included are 110,000 patents and standards per year. Material included is both of USSR and foreign origin.

Producer: VINITI, Moscow, USSR

Availability: Subscription basis.

The individual publications are as follows:

1. Astronomija
   Astronomy
2. Aviacionnye i Raketnye Dvigateli
   Aircraft, Rocket engineering
3. Avtomatika, Telemehanika i Vyčislitel'naja Tehnika
   Automation, remote control,
   Electronics
4. Avtomobil'nye Dorogi
   Road engineering
5. Avtomobil'nyji Gorodskoj Transport
   Automobile engineering and transport. City transport.
6. Biologija
   Biology.
7. Biologiceskaja Himija
   Biochemistry

8. Dvigateli Vnutrennego Sgoranija
Internal combustion engines

9. Elektronika i ee Primenenie
Electronics

10. Elektrosvjaz'
Electrical connection

11. Elektrotehnika i Energetika
Electrical engineering. Power engineering.

12. Farmakologija. Himioterapevtičeskie Sredstva. Toksikologija
Pharmacology. Toxicology

13. Fizika
Physics

14. Fotokinotehnika
Photography. Cinematography.

15. Geodezija
Geophysics

16. Geologija
Geology

17. Gornoe Delo
Mining

18. Gornye Mašiny
Mining machinery

19. Himičeskoe i Holodil'noe Mašinostroenie
Chemical and refrigerating plant and machine construction

20. Himija
Chemistry

21. Issledovanie Kosmičeskogo Prostranstva
Space research. Astronautics.

22. Jadernye Reaktory

Nuclear reactors

23. Kibernetika

Automation

24. Kommunal'noe, Bytovoe i Torgovoe Oborudovanie

Equipment for municipal services and trade.

Household equipment.

25. Korrozija i Zaščita ot Korrozii

Corrosion. Protection against corrosion

26. Kotlostroenie

Boiler making

27. Legkaja Promyšlennost'

Leather industry. Leather products. Shoes.

Textile industry.

Clothing industry.

28. Lesovedenie i Lesovodstvo

Forestry

29. Mašinostroitel'nye Materialy, Konstrukcii i Rasčet Detalej Mašin. Gidroprivod

Materials for mechanical engineering. Machine elements.

30. Matematika

Mathematics

31. Mehanika

Mechanics

32. Metallurgija

Metallurgy

33. Metrologija i Izmeritel'naja Tehnika

Metrology. Measuring technique

34. Nasosostroenie i Kompressorostroenie

pumps. Compressors

35. Oborudovanie Piščevoj Promyšlennosti

Food industry equipment

36. Obščie Voprosy Patologii. Onkologija

General pathology

Oncology

37. Počvovedenie i Agrohimija

Soil science. Fertilizers. Land improvement

38. Promyšlennyj Transport

Materials handling. Mechanical handling.

REGISTER OF RESEARCH PROJECTS

Name: Register of Research Projects

Producer: International Labour Office, Geneva, Switzerland

Scope, Coverage and Size:

Products:

Database Services:

Availability:

RESEARCH AND DEVELOPMENT ABSTRACTS

Name: Research and Development Abstracts

Producer: Department of Industry-Technology Reports Center, Orpington, Kent, U.K.

Scope, Coverage and Size: General science and technology. Database is about 9,000 items in size.

Products:

Database Services:

Availability:

SCIENCE CITATION INDEX

Names: SCI/Science Citation Index, corresponding to Science Citation Index, Source, Citation, 1961+

Producer: Institute for Scientific Information, Philadelphia, Pennsylvania, USA

SCIENCE DATA BASE

Name: Science Data Base, formerly OSU Multidisciplinary

Producer: Mechanized Information Center, Columbus, Ohio, USA

Scope, Ccverage and Size: Covers the literature of the hard sciences, engineering, and biological sciences. This database is created using the source tape portion of SCI and MARC(Books). Users are generally the faculty, students, and staff of Ohio State University. However, services are available to others outside the University. Database is about 1,119,300 items in size; the entire database is updated every 6 months, growth rate is insignificant because items are deleted and added to maintain the current 3 years.

Products: Machine-readable database services.

Database Services: Batch searching available from producer. MIC provides a weekly current awareness service as well as a retrospective search service.

Availability: Database is not commercially available.

Scope, Coverage and Size: International coverage of the prime journals of science, basic and applied, engineering, technology, life sciences, and medicine. Users are scientists and researchers working in areas related to basic and applied sciences, engineering, technology, life sciences, and medicine. Database is nearly 5 million items in size, with an estimated growth rate of 400,000 items per year.

Products: Machine-readable database and printed indexes.

Database Services: On-line searching available from European Space Agency; Lockheed Information Systems. Batch searching available from producer; ANSTEL; CISTI: COSTI; CSIR; ISU Comp Center; Kinokuniya; MIC; RIT;

Availability: Database may be leased. Interactive retrieval services available over TYMNET, Telenet and ESANET.

SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Names: SSIE/Smithsonian Science Information Exchange, includes the former Science Information Exchange the Biosciences Information Exchange, and the Medical Sciences Information Exchange, corresponding to Notice of Research Project.

Producer: Smithsonian Science Information Exchange, Inc.
Washington, D.C., USA

Scope, Coverage and Size: Summary descriptions of research sponsored primarily by the Federal government. Also includes research supported by major foundations and fund-raising organizations, and some research sponsored by universities, state and local government, industrial and foreign organizations. Users are investigators, research managers and administrators engaged in research, research management, and science policy decision-making. Database is about 200,000 items in size, with an estimated growth rate of 125,000 items per year.

Products: Machine-readable database, corresponding to printed version. Services derived from database.

Database Services: On-line searches available from System Development Corporation. Batch searching available from producer; custom searches; project notices; Research Information Packages; standard packages; SDI services, monthly and quarterly; Prepare directories and special tabulations.

Availability:

ANNEX III

BIBLIOGRAPHIC SYSTEMS: MISSION-ORIENTED AND APPLIED SCIENCE AND TECHNOLOGY

These systems are applications-oriented in the sense that they bring together scientific and technical information relevant to a particular broad activity, such as agriculture or energy research and development. They are often multidisciplinary but have not been included in the general multidisciplinary systems in Annex II because of their essential orientation towards definite fields of application.

It should be noted that several of the basic science and interdisciplinary systems described in Annexes I and II also contain sub-databases covering specific applications; cross-references are given in this Annex where necessary.

Note: Details given, including numbers of items, are believed to be approximately correct as of December 1977.

The following are the main applications fields covered in this Annex:

A. Aerospace
B. Agriculture and Agriculture-related fields
C. Earth Sciences
D. Energy including Atomic Energy
E. Engineering
F. Environment and Ecology
G. Metallurgy
H. Textile Science and Technology
I. Transportation

III A. AEROSPACE

THE NASA SYSTEM (STAR/IAA)

Name(s): Scientific and Technical Aerospace Reports (STAR)
International Aerospace Abstracts (IAA)

These two sub-databases make up the NASA System, STAR containing report literature and IAA journal articles.

Producer: (i) STAR: National Aeronautics and Space Administration, Washington, USA

(ii) IAA: American Institute of Aeronautics and Astronautics, New York, USA

Both databases are distributed by NASA

Scope, Coverage and Size: Worldwide coverage of technical reports, journal articles and monographs in aeronautics, space science and technology and related fields. Users are researchers, scientists and engineers working in these fields. The total database is about 800,000 items in size, with an estimated growth rate of some 60,000 items per year.

Products: Machine-readable database and Abstract journals

Database Services: Database is processed for on-line searching by the producer. ARAC; DTB; ESA; KASC; NC/STRC; NERAC; WESRAC;

Availability: Printed versions may be purchased. Machine-readable data and search products not commercially available, but have been made available on an exchange agreement basis.

See also PASCAL

III.B. AGRICULTURE AND AGRICULTURAL RELATED

See also Food and Agricultural Chemistry
(Chemical Abstracts) in Annex I

See also PASCAL in Annex II

AGRICULTURAL ECONOMICS DATABASE

See CAIN

THE COMMONWEALTH AGRICULTURAL BUREAUX SYSTEM

Names: CAB System/Commonwealth Agricultural Bureaux System

Note: The CAB system consists of some 20 linked sub-databases; see below for titles and scope.

Producer: Commonwealth Agricultural Bureaux, Slough, U.K.

Scope, Coverage and Size: Comprehensive coverage of the literature related to the agricultural sciences. Users are researchers, teachers, and practitioners working in the agricultural sciences. Estimated growth rate of the database is about 100,000 items per year.

Products: Machine-readable database and linked abstract journals.

Database Services: All CAB abstract journals are processed to provide a single database covering the work of all Institutes and Bureaux. The CAB System is continually being developed and arrangements may be made for the production of non-CAB abstract journals. In due course CAB may provide SDI and other retrieval services, including on-line service if required as well as new abstract journals produced by repackaging the database. The sub-databases are as follows:

Animal Breeding Abstracts

Scope, Coverage and Size: Covers the world literature on animal breeding, including farm animals, poultry, fur bearers, laboratory mammals and other animals of economic importance.

Apicultural Abstracts

Name: Apicultural Abstracts

Scope, Coverage and Size: Covers the world literature on bees, especially honey bees, as well as scientific and technical aspects of apiculture, hive products, materials used by bees, and the pollinating activities of bees.

Bibliography of Systematic Mycology

Name: Bibliography of Systematic Mycology

Scope, Coverage and Size: Covers the publications dealing with all aspects of the taxonomy of fungi

Bulletin of Entomological Research

Name: Bulletin of Entomological Research

Scope, Coverage and Size: Covers the papers dealing with original research concerning insects, mites, or ticks of economic importance in the agricultural, medical, or veterinary fields in any part of the world, contributed mainly by Commonwealth workers.

Dairy Science Abstracts

Name: Dairy Science Abstracts

Scope and Coverage: Covers the world literature on the sciecne and technology of dairying, the production of milk, processing of milk and milk products, and the milks of all mammals is included.

Field Crop Abstracts

Name: Field Crop Abstracts

Scope and Coverage: Covers the world scientific literature on annual field crops, temperate and tropical, thier agronomy, botany and physiology. The principal crops covered are cereals, legumes, root crops, oil-seed crops, miscellaneous crops (tobacco, buckwheat, kale) and green manures and cover crops.

Forestry Abstracts

Name: Forestry Abstracts

Scope and Coverage: Covers the world literature on forestry including factors of the environment, silviculture, work science, logging and forest engineering, forest injuries and protection, mensuration, management, administration, and forest economics, marketing and economics of forest products industries, and forest products and their utilization.

Helminthological Abstracts

Name: Helminthological Abstracts

Scope and Coverage: Covers the world literature on animal helminthology especially in relation to veterinary, medical, agricultural and fisheries science, and also includes plant and insect nematology and related subjects.

Herbage Abstracts

Name: Herbage Abstracts

Scope and Coverage: Covers the world scientific literature on sown and natural grassland, pasture plants and fodder crops.

Horticultural Abstracts

Name: Horticultural Abstracts

Scope and Coverage: Covers the world literature on horticultural and plantation crops, both temperate and tropical.

Index of Fungi

Name: Index of Fungi

Scope and Coverage: Lists the names of new genera, species and varieties of fungi and lichens, new combinations and new names compiled from the world of literature.

Index Veterinarius

Name: Index Veterinarius

Scope and Coverage: Comprehensive coverage of the veterinary literature from all parts of the world and a selective coverage of the related sciences for example, medicine, physiology, bacteriology, zootechny, etc.

Nutrition Abstracts and Reviews

Name: Nutrition Abstracts and Reviews

Scope and Coverage: Covers the literature on foods and feeding stuffs and the nutrition of man and of animals, wild and domesticated.

Plant Breeding Abstracts

Name: Plant Breeding Abstracts

Scope and Coverage: Covers the world literature in the genetics, cytology, breeding and varietal trials of all the principal agricultural crops, including cereals, grasses, leguminous forage crops, roots and tubers, fibre plants, sugar and starch plants, tobacco, tea, and cocoa, oil plants, spices, medicinal plants, fruits, vine, nuts, forest trees, vegetables and economic lower plants such as mushrooms.

Reviews of Applied Entomology

Name: Review of Applied Entomology

Scope and Coverage: Covers the world literature of applied entomology.

Review of Med and Vet Mycol

Names: Review of Med and Vet Mycol/Review of Medical and Veterinary Mycology

Scope and Coverage: Covers the field of veterinary and medical mycology, including mycoses of man anf farm, domestic, and wild animals, their aetiology, symptomatology, epidemiology and therapy; allergic disorders of man and animals associated with fungi: poisoning of man and animal by fungi or mould-contaminated feed; and general and systematic mycology and fungicides and antibiotics in relation to mycotic disorders.

Review of Plant Pathology

Name: Review of Plant Pathology

Scope and Coverage: Covers the world literature on plant pathology including diseases of crop plants, ornamental plants, and forest trees caused by fungi, bacteria, viruses, and non-parasitic factors, and their control; decay of timber, textiles, and vegetable products by fungi; fungicides and antibiotics in relation to the control of plant diseases and the prevention of fungal spoilage; and general and systematic mycology with particular emphasis on fungi of agricultural importance.

Soils and Fertilizers

Name: Soils and Fertilizers

Scope and Coverage: Covers the world literature on soils and fertilizer sciences.

Weed Abstracts

Name: Weed Abstracts

Scope and Coverage: Covers the literature on weeds, weed control and allied subjects.

World Agricultural Abstracts

Names: World Agricultural Economics/World Agricultural Economics and Rural Sociology Abstracts

Scope and Coverage: Covers the literature of agricultural economics and rural sociology including agricultural policy; agricultural products, supply demand and prices; marketing and distribution; international trade in agricultural products; finance and credit; economics of production; cooperation; education and training; rural sociology.

CAIN (AGRICOLA)

Names: CAIN/Cataloging and Indexing which corresponds to National Agricultural Library Catalog, and Bibliography of Agriculture. (CAIN now includes the former Agricultural Economics database of the US Department of Agriculture)

Producer: National Agricultural Library, Beltsville, Maryland, USA

Scope, Coverage and Size: Worldwide coverage of the literature related to agriculture, including agricultural economics and rural sociology, agricultural products, animal industry, engineering, entomology, food and human nutrition, forestry, pesticides, plant science, soils and fertilizers, and other related subject fields. Users are researchers, scientists working in agriculture-related areas. Database is over 800,000 items in size, with an estimated growth rate of 120,000 items per year.

Products: Machine-readable database corresponding to printed sources

Database Services: On-line searching available from Lockheed Information Systems; NC/STRC; System Development Corporation. Batch searching by CISTI; GIDC; ISU Comp Center; NIC.

Availability: Database may be purchased. Interactive interrogation available over TYMNET and Telenet.

CURRENT RESEARCH INFORMATION SYSTEM

Names: CRIS/Current Research Information System

Producer: Current Research Information Service
Washington DC, USA

Scope, Coverage and Size: Coverage of the current projects on the research programs of the USDA, State Agricultural Experiment Stations, and other cooperating institutions (Information sources stem from 6 USDA agencies [Agricultural Research Service, Forest Service, Economic Research Service, Cooperative State Research Service Farmer Cooperative Service, and Statistical Reporting Service]; 53 State Agricultural Experiment Stations and Forestry schools; and 25 other cooperating State institutions) Users are agricultural research scientists, managers and administrators of agricultural research projects from government agencies and affiliated institutions.

Products: Machine-readable database

Database Services: Batch searching available from producer

Availability: Database not commercially available

FRUITS

Name: Fruits

Producer: Institut Francais de Recherches Fruitieres Outre Mer, Paris, France

Scope, Coverage and Size: Covers the literature of tropical fruits, their cultivation, transportation, technology and manufactured products. Users are researchers and technicians.

Products: Machine-readable database and printed version

Database Services:

Availability:

PESTICIDAL LITERATURE DOCUMENTATION

Names: PESTDOC/Pesticidal Literature Documentation

Producer: Derwent Publications, Ltd., London, UK

Scope, Coverage and Size: Covers the literature of pesticides and allied data. Users are pesticides and agricultural chemicals manufacturers and researchers

Products: Machine-readable database

Database Services:

Availability:

VETERINARY LITERATURE DOCUMENTATION

Names: VETDOC/Veterinary Literature Documentation

Producer: Derwent Publications Ltd., London, UK

Scope, Coverage and Size: Covers the literature of veterinary science. Users are researchers in veterinary science and veterinary products manufacturers. The estimated growth rate of the database is about 5,000 items per year.

Products: Machine-readable database

Database Services:

Availability:

III.C. EARTH SCIENCES

includes OCEANOGRAPHY

See also: PASCAL in Annex II

GEOLOGICAL REFERENCE FILE

Names: Geological Reference File/GeoRef

Note: GeoRef. has some correspondence with the following printed publications-Bibliography and Index of Geology, 1967+; Bibliography and Index of Micropaleontology, 1967+; and Bibliography and Index of North American Geology, 1961-69.

Producer: American Geological Institute, Falls Church, Virginia, USA.

Size, Coverage and Scope: Worldwide coverage of the geosciences literature. Users are researchers, scientists working in areas related to geoscience. Database is about 380,000 items in size, with an anticipated growth rate of 45,000 items per year.

Products: Machine-readable database

Database Services: On-line searching by System Development Corporation; batch searching done by CISTI, and GIDC. SDI and retrospective search services and special bibliographies are available by contacting the American Geological Institute; year end indexes for about 8 journals are photo-composed; a current titles list for about 6-7 journals is also produced.

Availability: Machine-readable database available for lease. Interactive retrieval services available over TYMNET.

METEOROLOGICAL AND GEOASTROPHYSICAL ABSTRACTS

Names: Meteorological and Geoastrophycical Abstracts/MGA

Producer: American Meteorological Society, Boston, Massachusetts, USA

Scope, Coverage and Size: Meteorology, physical oceanography, surface water hydrology, glaciology, solar physics and related areas. Database is about 50,000 items in size, with an estimated growth rate of 7,200 items per year.

Products: Printed Abstract journal and machine-readable database.

Database Services: On-line searching by Lockheed Information Systems.

Availability: The machine-readable version is available from the producer under special arrangements. Interactive interrogation facilities are available over TYMNET and Telenet.

OCEANIC ABSTRACTS

Names: Oceanic Abstracts (Note: machine-readable version corresponds to Oceanic Index (former title); Oceanic Citation Journal (former title); and Oceanic Abstracts (current title))

Producer: Oceanic Abstracts, Louisville, Kentucky, USA

Scope, Coverage and Size: Worldwide coverage of significant literature on major ocean-related topics: marine biology, fisheries, geology, meteorology, oceanography, acoustics, remote sensing, desalination, ocean pollution, offshore mining, ocean engineering and transportation, ocean law. Users are scientists, engineers and administrators working in any area relating to the oceans. Database is about 87,000 items in size with an estimated growth rate of 6,500 items per year.

Products: Printed abstract and index journals. Machine-readable databases.

Database Services: On-line searching done over Lockheed Information Systems, and QL Systems Ltd.

Availability: Database may be purchased, but if service is offered outside user's organisation, special arrangements with the producer are required: royalty payments are necessary. Interactive interrogation facilities are possible over TYMNET and Telenet.

ROCK MECHANICS

Name: Rock Mechanics corresponding to Geomechanics Abstracts 1973, (formerly Rock Mechanics Abstracts).

Producer: Rock Mechanics Information Service, London, England

Scope, Coverage and Size: Covers the literature of geology, geophysics, mining, civil engineering, soil mechanics and fracture. Users are scientists and engineers working in mining, rock mechanics, civil engineering (surface and underground structures), geophysics (exploration, earthquakes, etc.), engineering and structure geology. Estimated growth rate is about 3,000 items per year.

Database Services: Current awareness and retrospective search services are available from the producer.

Availability:

UNDERGROUND EXCAVATION AND ROCK PROPERTIES INFORMATION

Names: UERPIC/Underground Excavation and Rock Properties Information.

Producer: Center for Information and Numerical Data Analysis and Synthesis, West Lafayette, Indiana, USA

Scope, Coverage and Size: Covers the world's open literature of mechanical, thermophysical, electrical and magnetic properties of selected rocks and minerals, tunneling and other underground excavations. Users are researchers, engineers, technical librarians, and managers working in areas related to underground excavation and rock. Database is about 3,500 items in size, with an estimated growth rate of 800 items per year.

Product: Machine-readable database and services.

Database Services: Batch searching done by producer. Special bibliographies are periodically produced and custom search services are also available.

Availability:

III.D. ENERGY, including Atomic Energy

see also PASCAL in Annex II

ENERGY ABSTRACTS

Name: Energy Abstracts (Note: the machine-readable version is merged from COMPENDEX, NSA, and GRA)

Producer: Engineering Index, Inc., New York, USA

Scope, Coverage and Size: Worldwide coverage of engineering and energy-related literature and conference proceedings. Users are technical information centers and technical libraries serving engineers affiliated with industry, government and academic and public institutions. Database is about 30,000 items in size, with an estimated growth rate of 15,000 items per year.

Products: Machine-readable database and Abstract journal.

Database Services: Batch searching done by producer.

Availability: Database may be leased for in-house use only.

ENERGY INFORMATION ABSTRACTS TAPE SERVICE

Names: Energy Information Abs/Energy Information Abstracts Tape Service corresponding to Energy Information Abstracts, and Environment Abstracts.

Producer: Environmental Information Center, Inc., New York, USA

Scope, Coverage and Size: Covers the literature of energy resources and environment related publications. Users are government agencies, colleges and universities, research centers, business corporations, citizen action groups. Database is about 150,000 items in size, with an estimated growth rate of 5,000 items per year.

Database Services:

Availability: Data may be leased from producer under special arrangements.

ENERGY INFORMATION DATA BASE

Names: Energy Information Data Base/EIDB

(Note: EIDB is the replacement for Nuclear Science Abstracts, which ceased publication in 1976, with wider coverage including non-nuclear energy systems).

Producer: Energy Research and Development Administration, Washington, USA, and ERDA Technical Information Center, Oak Ridge, Tennessee.

Scope, Coverage and Size: Worldwide coverage of all aspects of energy research and development, including nuclear, solar and wind and biological resources and systems.

Products: Machine-readable database and abstract journal.

Database Services:

Availability: Machine-readable database not commercially available, but is made available outside the USA under special arrangements with ERDA.

INTERNATIONAL NUCLEAR INFORMATION SYSTEM

Names: INIS/International Nuclear Information System, corresponding to printed abstract journal INIS Atomindex.

Producer: International Atomic Energy Agency, Vienna, Austria

Scope, Coverage and Size: Worldwide coverage of the literature dealing with peaceful uses of nuclear science and technology. Users are scientists, research workers, laboratories, and students. Total database size is about 420.000 items in size with an estimated growth rate of 60,000 - 80,000 items per year.

Products: Machine-readable database and printed abstract journals

Database Services: Interactive on-line interrogation facilities offered by producer, the Ministry of Economic Affairs (Belgium) on behalf of the EEC and possibly other agencies. National Atomic Energy Centres in IAEA member states also process the machine-readable database for their own purpose.

Availability: The machine-readable database is available free to all IAEA member states.

BATTELLE ENERGY INFORMATION CENTER

Names: BEIC/Battelle Energy Information Center.

Producer: Battelle, Columbus, Ohio, USA

Scope, Coverage and Size: Covers publications not normally covered by other on-line databases related to the principal current and potential energy sources, the complete delivery system from capture to utilization, and matters of environmental, legislative concern. Users are scientists and engineers, and managers, administrators interested in legislation and policy matters related to energy. The database is about 17,500 items in size, with an estimated growth rate of 1,000 items per year.

Database Services: On-line searching is carried out by the producer. Tailored literature search services are also provided; information analysis studies; on-line search training provided on contract.

EUROPEAN NUCLEAR DOCUMENTATION SERVICE

Names: ENDS/European Nuclear Documentation Service

Producer: Commission of the EEC

Entry of new items on this database has been discontinued. New material is now included in the INIS system.

HUNGARIAN TECHNICAL ABSTRACT JOURNAL / ENERGY

published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary.

III.E. ENGINEERING

See also MATERIALS (Chemical Abstracts)
in Chemistry in Annex I

See also CLAIMS/GEM in Patents in Annex IV

See also PASCAL in Annex II

ENGINEERING INDEX

Names: COMPENDEX/Computerized Engineering Index, corresponding to the Engineering Index Monthly.

Producer: Engineering Index, Inc., New York, USA

Scope, Coverage and Size: Worldwide coverage of significant engineering literature as found in journals, proceedings of conferences, symposia, and technical reports of associations, government agencies, universities, laboratories, etc. Users are technical information centers and technical libraries serving engineers affiliated with industry, government, and academic and public institutions. Database is about 580,000 items in size, with an estimated growth rate of 85,000 items per year.

Products: Machine-readable database and printed index journal.

Database Services: On-line searching available over ARAC;CISTI; ESA; Lockheed Information Systems; System Development Corporation; Batch searching available from ARAC; CISTI; COSTI; CSC; CSIR; DTB; GIDC; IBH; INT-CIT; Kinokuniya; Loughborough University of Technology; NC/STRC; NERAC; RIT; U of NC; UNICIS; UVTEI-UTZ; Universa v Ljubljani.

Availability: Database may be leased for either batch or on-line operations. Interactive interrogation facilities available over TYMNET, Telenet and ESANET.

DOMA (Dokumentation Maschinenbau)

Name: DOMA (Dokumentation Maschinenbau)

Producer: DOMA-Inform GmbH (Gesellschaft zur Literaturinformation des Maschinenbaues m.b.H.), Frankfurt/M., FRG.

Scope, Coverage and Size: covers mechanical engineering; from 1972 to 1976: 90,000 records; 2,500 records/month.

INFORMATION SERVICES IN MECHANICAL ENGINEERING

Names: ISMEC/Information Services in Mechanical Engineering corresponding to ISMEC Bulletin, 1973+

Producer: Institution of Electrical Engineering, London, England and ISMEC, Louisville, Kentucky, USA

Scope, Coverage and Size: Covers the literature of engineering management and production, measurement and control, mechanics, tools and equipment, energy and power, transport and handling, mechanical engineering and natural resources, and other applications of mechanical engineering. Users are managers, administrators, researchers from industry, government and academic institutions working in areas related to engineering management and mechanical engineering. Database is about 45,000 items in size with an estimated growth rate of about 15,000 items per year.

Products: Machine-readable database and printed announcement journal

Database Services: On-line search available over Lockheed Information Systems. Batch searching available from producer.

Availability: Machine-readable database may be leased on annual subscription basis. Interactive interrogation facilities available over TYMNET and Telenet.

MECHANICAL ENGINEERING

Names: MechEn/Mechanical Engineering

Producer: Royal Institute of Technology, Stockholm, Sweden

Scope, Coverage and Size: Covers the literature of machinery, mechanical engineering, tooling, and workshop practice. Users are industrial, mechanical and production engineers. Estimated growth rate is about 45,000 items per year.

Products: Machine-readable database only.

Database Services: Batch searching available from producer

Availability: Database is available under special arrangements producer.

NONDESTRUCTIVE TESTING INFORMATION ANALYSIS CENTER

Names: NTIAC/Nondestructive Testing Information Analysis Center; corresponding hardcopy source is planned.

Producer: Southwest Research Institute, San Antonio, Texas, USA

Scope, Coverage and Size: Covers the international literature related to nondestructive testing and/or evaluation techniques and processes, involving material-energy interaction phenomena such as radiographic, holographic, acoustic, magnetic, etc. Users are research, industry and government agencies interested in nondestructive testing.

Products: Machine-readable database.

Database Services: The Southwest Research Institute provides a search service by accessing the NTIAC database which is processed at DDC. Various range of on-demand search services are offered through the Southwest Research Institute.

Availability: Database is not commercially available.

VIBANK

Name: VIBANK

Producer: Universite de Laval, Quebec, Canada

Scope, Coverage and Size: Mechanical Engineering. Estimated growth rate of the database is about 12,000 items per year.

Product: Machine-readable database

Database Services:

Availability:

HUNGARIAN TECHNICAL ABSTRACT JOURNAL / MECHANICAL ENGINEERING

and

MECHANICAL ENGINEERING TECHNOLOGY

published by Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary

III.F. ENVIRONMENT AND ECOLOGY

See also Ecology and Environment
(Chemical Abstracts) in CHEMISTRY in Annex I
See also PASCAL in Annex II

ENVIRONMENT PROTECTION AGENCY LIBRARY SYSTEM

Names: Environment Protection Agency Library System/EPA Library System.

Producer: Environmental Protection Agency, Washington, DC, USA

Scope, Coverage and Size: The system contains seven sub-databases: Air Ecology System; EPA Reports System; International Environmental Reports System; Journal Holdings System; Hardbound Book System; Circulation System; Document Control System.

Air Ecology System: The machine-readable version corresponds to a printed product version Air Ecology Bibliographies. Scope and Coverage: Covers literature dealing with air pollutants and their effects on vegetation and animal life. Users are government agencies and researchers, managers, administrators working in areas related to air pollution and effects on vegetation and animal life.

Database is about 10,000 items in size. The database is not commercially available.

Air Pollution Technical Information Center (APTIC): The machine-readable version corresponds to a printed product Air Pollution Abstracts. Scope and Coverage: Chemistry and Chemical Engineering; Environment; Life Sciences; Patents; Users are researchers, government agencies, industry, trade organisations and private citizens. The database is about 90,000 items in size with an estimated growth rate of 10,000 - 13,000 items per year. Database is not commercially used

Database Services: Special bibliographies on air pollution topics generated periodically in response to agency demands; SDI service for EPA personnel.

Environmental Protection Agency Reports System: The machine-readable version corresponds to a printed product: EPA Reports Bibliography Quarterly. Scope and Coverage: Covers the reports produced by EPA contractors and grantees. Users are those interested in the reports and literature generated by EPA contractors and grantees. The database is about 10,000 items in size, with an estimated growth rate of 2,000 items per year. Database is available under special arrangements and is included in the NTIS system (q.v.)

International Environmental Reports System: Machine-readable version corresponds to printed product: monthly summary of environmental foreign reports. Scope and Coverage: covers the major international literature dealing with the management and planning of environmental concerns related to air, water, pesticides, radiation, solid waste and noise. Users are those interested in the literature dealing with the management and planning of environmental concerns. Database is approximately 5,500 items in size, with an estimated growth rate of about 1,800 items per year. Database is processed for batch searching by permission. The database is not commercially available.

SOLID WASTE INFORMATION RETRIEVAL SYSTEM

Names: SWIRS/Solid Waste Information Retrieval System, corresponding to printed version Solid Waste Information Retrieval System Monthly Abstract Bulletins, 1974+

Producer: Environmental Protection Agency, Washington DC, USA

Scope, Coverage and Size: Comprehensive coverage of the international literature on solid waste management. Users are researchers, managers and administrators working in the area of solid waste management. The database is about 40,000 items in size, with an estimated growth rate of 6,000 items per year.

Products: Machine-readable database and Abstract Journal

Database Services: Batch searching available from Franklin Institute

Availability:

POLLUTION LOOKOUTS

Name: Pollution Lookouts

Producer: Medical Information Centre, Stockholm, Sweden

Scope, Coverage and Size:

Products:

Database Services:

Availability:

NOISE

Name: Noise, formerly ENVIRON-Noise File

Producer: Environmental Protection Agency, Washington, DC, USA

Scope, Coverage and Size: Literature dealing with all aspects of noise (technical, health-related, legislation, standards, etc.). Users are government agencies and contractors, noise engineers, occupational hygienists, researchers. Database is about 13,000 items in size, with an estimated growth rate of 2,400 items per year.

Products: Machine-readable database

Database Services: On-line searching available from Information Inc.

Availability: Database is not commercially available.

ENVIRONMENTAL PERIODICALS BIBLIOGRAPHY

Names: EPB/Environmental Periodicals Bibliography, corresponding to printed version (same name)

Producer: International Academy of Santa Barbara, Santa Barbara, California, USA. Distributed by American Bibliographic Center-Clio Press, Santa Barbara, California, USA.

Scope, Coverage and Size: Covers approximately 260 journals publishing articles related to the environment and indexes all tables of contents. Database is about 80,000 items in size, with an estimated growth rate of 20,000 items per year.

Products: Machine-readable database and printed announcement journal.

Database Services:

Availability: Machine-readable database may be leased.

ENVIRONMENTAL SCIENCE INDEX

Names: ESI/Environmental Science Index, corresponding to printed Environmental Abstracts, 1970+.

Producer: Environment Information Center, Inc., New York, USA

Scope, Coverage and Size: Covers the literature of environmental planning. Users are urban and regional planning government agencies, colleges and universities, research centers, business corporations, citizen action groups. Database is about 76,000 items in size with an estimated growth rate of 8,800-11,000 items per year.

Products: Machine-readable database and Abstract Journal.

Database Services:

Availability: Database is available under special arrangements with producer.

ABSTRACTS ON HEALTH EFFECTS OF ENVIRONMENTAL POLLUTANTS

Names: HEEP/Abstracts on Health Effects of Environmental Pollutants, derived from Biological Abstracts and BioResearch Index

Producer: BioSciences Information Service, Philadelphia, Pennsylvania, USA.

Scope, Coverage and Size: Occupational health and medicine; potentially harmful effects of pollutants on humans; lower vertebrates as indicators of substances toxic to man, analytical methods for examining biological tissues or fluids. Users are information centers and technical libraries serving toxicologists, industrial hygienists, biomedical researchers, environmental quality personnel. Database is about 60,000 items in size, with an estimated growth rate of 12,000 items per year.

Products: Machine-readable database.

Database Services: On-line searching available from NLM (note: HEEP database is part of the TOXLINE file processed at NLM).

Availability: Backfile is not commercially available. Update tapes may be leased on annual subscription basis. Access to HEEP material on-line is via those organizations providing TOXLINE services.

POLLUTION ABSTRACTS

Name: Pollution Abstracts, corresponding to printed product with the same title.

Producer: Pollution Abstracts, Louisville, Kentucky, USA.

Scope, Coverage and Size: Worldwide coverage of significant literature on all major pollution-related topics: air pollution, water pollution, solid wastes, noise pollution, pesticides, radiation, and general environmental quality. Users are researchers, business executives, government administrators, scientists, engineers, librarians, academicians and students working in areas related to pollution. Database is about 50,000 items in size, with an estimated growth rate of 6,500 items per year.

Products: Machine-readable database and Abstract Journal.

Database Services: On-line searching available from QL Systems Ltd; System Development Corporation; ESA; batch searching done by NERAC.

Availability: Machine-readable database available for purchase or leasing (special arrangements) from producer.

III.G. METALLURGY

See also PASCAL in Annex II

METALS ABSTRACTS INDEX

Names: METADEX/Metals Abstracts Index (Note: in cooperation with the Metals Society of London, ASM produces the Alloys Index which provides unique alphanumeric coding for identifying alloys. The Alloys Index is included in the METADEX lease arrangement and provides access to METADEX references after 1974 by alloy names, metallurgical systems and intermetallic components).

Producer: American Society for Metals, Metals Park, Ohio, USA

Scope, Coverage and Size: Metallurgy. Users are researchers and scientists working in areas related to metallurgy. Database is about 330,000 items in size, with an estimated growth rate of 30,000 items per year.

Products: Machine-readable database and Abstracts Journal

Database Services: On-line searching from ESA, Lockheed Information Systems; RIT; batch searching available from NC/STRC; NERAC; RIT. ASM provides current awareness and retrospective searches; current awareness group profiles are also available on 85 selected topics.

Availability: Machine-readable database may be leased from producer. Interactive interrogation facilities available over TYMNET, Telenet and ESANET.

MECHANICAL PROPERTIES DATA CENTER

Names: MPDC/Mechanical Properties Data Center

Producer: Belfour Stulen, Inc., Traverse City, Michigan, USA

Scope, Coverage and Size: Covers the literature on fabrication, processing, test procedures, alloying and other subjects of interest to those involved in the development, application, and evaluation of metals and metal alloys, and in particular, the mechanical properties of metals. Users are researchers, engineers and designers analyzing failure in structures and evaluating design. Database is about 100,000 items in size, with an estimated growth rate of 1,200-1,600 items per year.

Product: Machine-readable database

Database Services: Batch searching available from producer. The following three publications are produced: Aerospace Structural Metals Handbook, Structural Alloys Handbook, and the Alloy Cross Index.

Availability: Database is available under special arrangements with producer.

NBS ALLOY DATA

Names: NBS Alloy Data/Bibliography and Index to the Literature in the NBS Alloy Data Center corresponding to printed versions: NBS Special Publication 324, The NBS Alloy Data Center: Permuted Materials Index, and NBS-OSRDB-70-2, the NBS Alloy Data Center: Author Index.

Producer: National Bureau of Standards, Washington, DC, USA, distributed by National Technical Information Service, Springfield, Virginia, USA.

Scope, Coverage and Size: Covers the international literature related to the physical properties of metals and alloys. Users are industry, universities, and government. Database is about 11,000 items in size, with an estimated growth rate of 800 items per year.

Products: Machine-readable database and Index Journals.

Database Services: Batch searching available from producer. On-demand search services available.

Availability: Backfile may be purchased. Current updates not commercially available.

RARE EARTH INFORMATION CENTER

Names: RIC/Rare Earth Information Center

Producer: Iowa State University, Ames, Iowa, USA

Scope, Coverage and Size: Covers the literature of solid state physics of the rare earth metals, intermetallic compounds and alloys, the analytical, inorganic and physical, chemistry, ceramics, technology, geochemistry, and the toxicity of the rare earth elements and compounds.

Product: Machine-readable database

Database Services:

Availability:

SYSTEM FOR DOCUMENTATION AND INFORMATION IN METALLURGY

Names: SDIM/System for Documentation and Information in Metallurgy

Producer: Commission of the European Communities, Ispra, Italy.

Scope, Coverage and Size: Mining and metallurgy; anticipated growth rate of the database is about 35,000 items per year.

Product: Machine-readable database

Database Services:

Availability: SDIM is a system under development. The database is available to member countries of the EEC.

WORLD ALUMINUM ABSTRACTS

Names: WAA/World Aluminum Abstracts, corresponding to printed version of the same name.

Producer: American Society for Metals, Metals Park, in association with Aluminum Association, New York, European Primary Aluminum Association, Düsseldorf, Japan Light Metal Association, Tokyo, and Aluminum Development Council, Sydney.

Scope, Coverage and Size: Aluminum ore processing — aspects of mining through end usage. Users are researchers, scientists, managers working in areas related to aluminum ore processing and users of aluminum. Database is about 46,000 items in size, with an estimated growth rate of 6,000 items per year.

Products: Machine-readable database and Abstract Journal

Database Services

Availability: Database may be leased from producer. Interactive interrogation facilities available over TYMNET, and ESANET.

III.B. TEXTILE SCIENCE AND TECHNOLOGY

SPECIALIZED TEXTILE INFORMATION SERVICE

Names: STI/Specialized Textile Information Service, with partial correspondence to printed version World Textile Abstracts

Producer: Shirley Institute, Manchester, England

(Note: Four research institutions collaborate in covering the literature for STI: British Launderer's Research Association (covers all aspects of laundering and dry cleaning); Hatra (covers all aspects of knitting and making-up); Shirley Institute (covers all fibres other than wool and hair and their properties and processing other than knitting, including lacemaking, knotting and braiding and bonding, needling and tufting); Wira (covers wool and hair and their properties and processing other than knitting))

Scope, Coverage and Size: Covers the literature of permanent technical value on the science and technology of textiles plus all relevant UK and US patent literature. Estimated growth rate of database is about 8,000 items per year.

Products: Machine-readable database and Abstract Journal.

Database Services:

Availability: Database may be leased from producer.

TEXTILE TECHNOLOGY DIGEST KEYTERM INDEX

Names: Textile Technol/Textile Technology Digest Keyterm Index, corresponding to printed version of the same name.

Producer: Institute of Textile Technology, Charlottesville, Virginia, USA

Scope, Coverage and Size: Covers the literature of textile technology and textile marketing. Users are patent attorneys, research and development personnel, managers, and administrators working in the textile industry. Database is about 145,000 items in size, with an estimated growth rate of 14,000 - 16,000 items per year.

Products: Machine-readable database and Index Journal

Database Services: Batch searching available from producer; NC/STRC; Custom search services are available.

Availability: Database may be purchased from producer.

TITUS

Names: TITUS/Textile Information Treatment USers' Service

Producer: Institut Textile de France, Boulogne sur Seine, France.

Scope, Coverage and Size: Covers the literature related to goods and materials for the textile and related industries, structure, properties; processes and machines for the production of fibrous materials,...,non-wovens, etc.; treatment and machines for finishing, bleaching, printing, dyeing; and treatments and machines for the manufacture of finished products. Estimated growth rate of database is about 30,000 items per year.

Products: Machine-readable database.

Database Services: Producer provides on-line search facilities. The system provides for automatic translation at both input and output stages (English, French, German and Spanish). Interactive interrogation facilities foreseen for EURONET.

Availability: Database is available for lease under special arrangements with producer.

III. I. TRANSPORTATION

RAILROAD RESEARCH INFORMATION SERVICE

Names: RRIS/Railroad Research Information Service, with correspondence to printed products RRIS Special Bibliography, March 1973+; RRIS Bulletin, Autumn 1973 - present (Semi-annual); and RRIS Cumulative Subject Index.

Producer: Transportation Research Board, Washington DC, USA.

Scope, Coverage and Size: Worldwide coverage of publications dealing with railroad research information. Users are managers, engineers and researchers dealing with the planning, building, maintaining, and operating of rail transportation systems. Database is about 13,000 items in size with an estimated growth rate of 2,500 items per year.

Products: Machine-readable database and printed versions.

Database Services: On-line searching available from producer; Battelle; Batch searching available from producer; monthly custom current awareness services on request basis.

Availability: Database is not commercially available.

HIGHWAY RESEARCH INFORMATION SERVICE

Names: HRIS/Highway Research Information Service, with partial correspondence to printed version HRIS Abstracts, 1966+; Highway Research in Progress (HRIP), 1965-74; and US HRIP, 1975.

Producer: Transportation Research Board, Washington DC, USA.

Scope, Coverage and Size: Worldwide coverage of publications dealing with highway and transit research information. Users are transportation adminstrators, planners, operational personnel, engineers, and researchers dealing with information about highway and urban-related research. Database is about 80,000 items in size, with an estimated growth rate of 10,000 items per year.

Products: Machine-readable database and related Abstract Journals.

Database Services: On-line searching available from producer and Battelle; batch searching available from producer. Monthly custom current awareness services and general subject area current awareness services available in hardcopy and magnetic tape.

Availability: Machine-readable database not commercially available.

HIGHWAY SAFETY LITERATURE

Names: HSL/Highway Safety Literature, with some correspondence to printed version of the same name.

Producer: National Highway Traffic Safety Administration Washington DC, USA

Scope, Coverage and Size: Publications acquired by the National Highway Traffic Safety Administration covering highway traffic safety, motor vehicle safety, traffic accidents, driver education, alcohol and its relation to traffic safety, pedestrian safety and related subjects. Users are researchers and managers working in fields related to traffic safety and transportation. Database is about 20,000 items in size, with an estimated growth rate of 2,000 items per year.

Database Services: On-line searching available from Informatics, Inc.;

Availability: Machine-readable database may be purchased from producer.

INTERNATIONAL ROAD RESEARCH DOCUMENTATION

Names: IRRD/International Road Research Documentation

Producer: 1. Transport and Road Research Laboratory, Crowthorne, UK; 2. Laboratoire Central des Ponts et Chaussées, Paris, France; 3. Bundesanstalt für Strassenwesen, Forschungsgesellschaft für das Strassenwesen, Köln, FRG.

Note: Each of these centres produces one language version of the database. The coordination organization for the service as a whole is OECD, Paris, France.

Scope, Coverage and Size: Database covers worldwide literature and reports on all aspects of road transport. It contains about 80,000 items with an estimated growth rate of 10,000 items per year.

Product: Machine-readable database.

Database Services: Off-line searches are processed by the three producing centres and others who are members of IRRD. VTI Stockholm provides on-line search services in Scandinavia.

Availability: Over 20 member institutes throughout the world participate in IRRD and receive a copy of the database at nominal charges. Otherwise, the database is not commercially available. Interactive interrogation facilities are planned over EURONET.

SHIP ABSTRACTS

Name: Ship Abstracts, corresponding to printed version of the same name.

Producer: Norsk Senter for Informatikk, Oslo, Norway

Scope, Coverage and Size: Covers selected ship technical and management articles from international journals, reports, proceedings, patents.

Database Services:

Availability:

TRANSPORT RESEARCH INFORMATION SYSTEM

Names: TOL/TRIS On-line/Transport Research Information System

Note: TOL is the on-line component of TRISNET, an evolving US national network of transportation research information services, whose goal is to provide optimum access to transportation research information.

TOL is derived from a merging of DOT work in progress; Highway Research in Progress; GRA (DOT-Sponsored Reports); HRIS; RRIS; MRIS; Transportation Noise Research Information Service Abstracts; and Transportation Systems Center-Technology Sharing Program.

Producer: Transportation Research Board, Washington DC, USA

Scope, Coverage and Size: Consists of résumés of on-going or recently completed transportation research projects and abstracts of the transportation research literature. Estimated growth rate of the database is about 40,000 items per year.

Product: Machine-readable database.

Database Services: On-line searching available from Battelle.

Availability: The database is not commercially available.

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / TRANSPORT

published by Hungarin Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary.

INDUSTRY - SPECIFIC SYSTEMS

In this Annex are brought together information systems relating to specific technologies, for example those relevant to a particular industry. In many cases the requirements of industrial development in the industrialized countries have made it necessary to create special information systems, and the emphasis in this Annex is on such systems; however the systems of more general application noted in Annex III, and parts of the basic scientific and technical information systems in Annex I and II, are often of direct and specific application as information sources to particular branches of industry. Where this has been definitely established, the Annex I - III source is repeated in this Annex in the particular industry sections concerned. Otherwise no cross-referencing has been attempted.

Note: Details given, including numbers of items, are believed to be approximately correct as of December 1977.

The material in this Annex is arranged in the following sections:

A. General
B. AGRO-Industries
C. Building and Construction
D. Ceramics
E. Clothing
F. Computers and Electronics
G. Electrotechnology
H. Fluid Engineering
I. Food Industries
J. Glass
K. Instrumentation
L. Leather Goods
M. Machine Tools
N. Non-ferrous Metals
O. Paint- and Surface Coatings
P. Paper and Pulp
Q. Petroleum
R. Pharmaceutics
S. Rubber and Plastics
T. Shipping
U. Soap and Detergents
V. Steel and Iron Processing
W. Water
X. Welding
Y. Wood

IV-A GENERAL INDUSTRIAL SYSTEMS

These systems are not specific to a particular industry, but may be regarded as the equivalent of multi- or inter-disciplinary systems in the more orthodox scientific and technical bibliographic information systems. That is, they either cover the whole industrial development field, or they are concerned with broad topics affecting several industries.

INDUSTRIAL DEVELOPMENT ABSTRACTS

Producer

This publication is produced by UNIDO as part of its industrial information system (INDIS).

Brief Description

The publication includes UNIDO printed publication such as major study reports, articles in the Industrial Research and Development News, the Industrialization and Productivity Bulletin, documents for the Industrial Development Board, reports and proceedings of expert working groups, internal studies, public information series, and reports relating to technical assistance. There are subject and author indexes and a thesaurus of indexing terms is available. Industrial development abstracts are computer produced, using ISIS software; online interrogation facilities are not yet generally available.

INFORMATION SOURCES IN INDUSTRIAL QUALITY CONTROL

Number 6 in the UNIDO series "Guides to Information Sources" with the above title lists international regional and national organisations providing information on this subject, basic text books and manuals, monographs, current periodicals, proceedings, reports, bibliographies, etc. covering the field. In addition it lists two abstracting and indexing periodicals:-

Quality Control and Applied Statistics

Reliability Abstracts and Technical Reviews

UNIDO GUIDES TO INFORMATION SOURCES

General

The UNIDO publications mentioned above, giving data on information sources for quality control, etc. is one of a series which will be frequently mentioned in the following sections; to avoid repetition it seems appropriate to note here the general form of these guides and to briefly describe the information they contain. In general, each guide lists the following:-

1) Addresses of professional trade and research organisations, learned societies and special information services, on an international, regional, governmental and non-governmental and national basis, concerned in the specific field covered by the Guide. Directories are listed, followed by sources of standards, lists of basic handbooks and manuals, monographs and current periodicals. There is an important section on abstracting and indexing journals in the field,

lists of proceedings and reports, specialised dictionaries and encyclopaedias, biobligraphy, etc. Finally, specialised sources of information such as consulting services, financial and marketing information, etc. are listed.

In the following sections of this annex where a guide or guides exists in a particular field, the title and number of the publication will be mentioned, along with any list of abstract journals given. Space prohibits even a summary of the other important material contained in each of these guides.

IV-B THE AGRO-INDUSTRIES

Agricultural Implements and Machinery Industry

This is covered by UNIDO Guide No.8. The following abstracting and indexing journals are listed:-

1. Agronomie Tropicale,
   published by Institut de recherches agronomiques tropicales
   et de cultures vivrières (IRAT)
   Paris, France
2. Boletin de Resumenes de Articulos cientificos y Tecnicos de Ingenieria Rural,
   published by Centro de Información y Documentatión del
   Patronato "Juan de la Cierva",
   Madrid, Spain.
3. Bulletin Bibliographique International du Machinisme Agricole - International Farm Machinery Abstracts,
   published by Centre national d'études et d'expérimentation
   de machinisme agricole (CNEEMA)
   Antony, France
4. Bulletin de Documentation et d'Information,
   published by Syndicat genéral des constructeurs de
   tracteurs et machines agricoles (SGCTMA)
   Paris, France

5. CDIUPA Bulletin Bibliographique,
(Centre de Documentation des Industries Utilisatrices
et de Produits Agricoles),
published by Centre de documentation des industries
utilisatrices de produits agricoles (CDIUPA)
Massy, France

6. Documentation East-European Agricultural Literature,
published by Centre for Agricultural Publishing and
Documentation (PUDOC),
Wageningen, Netherlands

7. Ekspress-Informatsiia SelpSkokhoziaistvennykh Rabot,
(Express information on agricultural machinery and
implements, mechanization of agricultural work),
published by Mezhdunarodnaia Kniga
Moscow, Union of Soviet Socialist Republics

8. Ekspress-Informatsiia Traktorostroenie,
(Express information tractor construction),
published by Mezhdunarodnaia Kniga,
Moscow, Union of Soviet Socialist Republics

9. Hungarian Agricultural Review/Ungarische Agrarrundschau/
Vestnik Vengerskoi Sel'Skokhoziastvennoi Literatury,
published by Information Centre of the Ministry of
Agriculture and Food
Budapest, Hungary

10. Informator Patentowy,
(Information on patents),
published by Przemyslowy Instytut Maszyn Rolniczych
Poznan, Poland

11. Landtechnische Zeitschriftenschau
    (Agricultural mechanization journal abstracts),
    published by Fachdokumentationsstelle fuer Landtechnik
    in der Forschungsanstalt fuer Landwirtschaft
    Braunschweig-Voelkenrode, Federal Republic of Germany
12. Landwirtschaftliches Zentralblatt Abteilung I: Landtechnik,
    (Agricultural review. Part I: Agricultural mechanization),
    published by Deutsche Akademie der Landwirtschaftswissenschaft
    Berlin, German Democratic Republic
13. Przeglad Dokumentacyjny Ciagnikow I Maszyn Rolniczych
    (Documentation review of agricultural implements and machines)
    Poznan, Poland
14. Referativnyi Zhurnal Tractory I Sel'Skokhoziaistvennye Mashiny I Orudia
    (Review journal on tractors and agricultural machines and implements),
    published by Vsesoiusnii Institut Nautshnoi i Tekhniţcheskoi Informatsii (VINITI)
    Moscow, Union of Soviet Socialist Republics
15. Revista de Referate - Series VI. Mecanizarea Agriculturii
    (Review of reports - Series VI. Agricultural mechanization),
    published by Centrul de Documentare Agricola
    Bucharest, Romania
16. Tropical Abstracts,
    published by Royal Tropical Institute,
    Amsterdam, Netherlands.

17. Zemedelska Technika,
(Agricultural technology),
published by Institute of Scientific and Technical Information
Prague, Czechoslovakia

PESTICIDES INDUSTRY

This is covered by UNIDO Guide No. 10.

1. Acridological Abstracts,
published by Anti-Locust Research Centre
London, England.

2. AGDOC / Basic Abstract File,
published by Derwent Publications Ltd.
London, England

3. Bulletin Signaletique. Part 380: Agronomie-Zootechnie-Phyto-Pathologie-Industries Alimentaires,
published by Centre de documentation du centre national de la recherche scientifique
Paris, France

4. Chemical Abstracts - Pesticides (19),
published by Chemical Abstracts Service
Columbus, Ohio, United States of America

5. Health Aspects of Pesticides - Abstract Bulletin,
published by Government Printing Office,
Washington, D.C. , United States of America

6. Pans/Pest Articles and News Summaries,
published by Public Affairs Research Council of Louisiana
Baton Rouge, Louisiana, United State of America

7. Pest Articles and News Summaries,
published by Public Affairs Research Council of Louisiana
Baton Rouge, Louisiana, United States of America

8. Pest Articles and News Summaries,
published by Department of Technical Cooperation
London, England

9. Pestdoc-Abstract Journal,
published by Derwent Publications Ltd.,
London, England

10. Pesticide,
published by Centrul de Documentare al Industrieie Chimice
si Petroliere,
Bucharest, Romania

11. Pesticides Documentation Bulletin,
published by Superintendent of Documents
Washington, D.C., United States of America

12. Plant Protection Abstracts,
published by Makhteshim Chemical Works Ltd.
Beersheba, Israel

13. Referatekartei: Unkrautbekaempfung,
published by Deutsche Akademie der Landwirtschaftswissenschaften
zu Berlin
Berlin, German Democractic Republic

14. Referativnyi Zhurnal: Pochvovedeni I Agrokhimiia,
(Abstract journal: soil science and agro-chemistry)
published by Akademiia Nauk SSR
Moscow, USSR

15. *Referativnyi Zhurnal: Rastenievodstvo*
(Abstract journal: Plant science)
published by Vsesoiuznyi Institut Nauchnoi i
Tekhnicheskoi Informatsii (VINITI)
Moscow, USSR

16. *Review of Applied Entomology*,
published by Commonwealth Institute of Entomology
London, England

17. *Review of Applied Mycology*,
published by Commonwealth Nycological Institute
Kew, England

18. *Review of Plant Pathology*,
published by Commonwealth Mycological Institute
Kew, England

19. *Revista de Referate: VIII. Protectia Plantelor*,
published by Centrul de Documentare Agricola
Bucharest, Romania

20. *Search: Pesticides Division*,
published by Compendium Publishers International Corporation
Fort Lee, United States of America

21. *Tropical Abstracts*,
published by Royal Tropical Institute
Amsterdam, Netherlands

22. *Update/Agricultural Chemicals*,
published by Information Co. of America,
Philadelphia, United States of America

23. *Weed Abstracts*,
published by Weed Research Organisation
Farnham Royal, England

ANIMAL FEED INDUSTRY

This is covered by UNIDO Guide No. 13. The following abstracting and indexing journals are listed:-

1. Applied Science and Technology Index,
   published by The H.W. Wilson Company
   Bronx, New York, United States of America
2. Chemical Abstracts - 10: Animal Nutrition,
   published by Chemical Abstracts Service
   Columbus, Ohio, United States of America
3. Food Science and Technology Abstracts,
   published by International Food Information Service (IFIS)
   Frankfurt/Main, Federal Republic of Germany
4. F and S International,
   published by Predicast Inc.
   Cleveland, Ohio, United States of America
5. Informationsdienst ueber Gruenland und Feldfutter,
   (Information service on green land and forage crops)
   published by Dokumentationsstelle fuer Gruenlandwirtschaft und Futterbau
   Freising-Weihenstephan, Federal Republic of Germany
6. Laboratory Animal Science,
   published by Laboratory Animal Information Center
   Argonne, Illinois, United States of America
7. Landwirtschaftliches Zentralblatt - 12: Tierzucht, Tierernaehrung, Fischerei,
   (Agricultural central paper - 12: animal husbandry, animal nutrition, fisheries)
   published by Deutsche Akademie der Landwirtschaftswissenschaften zu Berlin,
   Berlin, German Democractic Republic

8. Nutrition Abstracts and Reviews,
   published by Commonwealth Bureau of Animal Nutrition
   Aberdeen, Scotland
9. Referatekartei "Futterproduktion einschliesslich Gruenland",
   (Reference cards: feed production including green land)
   published by Deutsche Akademie der Landwirtschaftswissenschaften
   zu Berlin
   Berlin, German Democratic Republic

THE FERTILIZER INDUSTRY

This is covered by UNIDO Guide No. 21. The following abstracting and indexing journals are listed:-

1. AGDOC: Basic Abstract File,
   published by Derwent Publications Ltd.
   London, England
2. Bilten Dokumentacije: Hemija I Hemijska Industrija,
   published by Yugoslav Centre for Technical and Scientific
   Documentation
   Belgrade, Yugoslavia
3. British Patent Abstracts: Chemical Only,
   published by Derwent Publications Ltd,
   London, England
4. Bulletin Signaletique, 170: Chimie,
   published by Centre national de la recherche scientifique
   Paris, France
5. Bulletin Signaletique, 880: Genie Chimique: Industries Chimiques et Parachimiques,
   published by Centre national de la recherche scientifique
   Paris, France

6. *Chemical Abstracts: Fertilizers, Soils and Plant Nutrition (2)): Industrial Inorganic Chemicals*,
published by American Chemical Society
Columbus, Ohio, United States of America

7. *Chemical Industry Notes*,
published by American Chemical Society
Columbus, Ohio, United States of America

8. *Chemical Market Abstracts*,
published by Predicasts, Inc.,
Cleveland, Ohio, United State of America

9. *Chemical Titles*,
published by American Chemical Society
Columbus, Ohio, United States of America

10. *Current Bibliography on Science and Technology: Chemistry and Chemical Industry*,
published by Japan Information Center of Science and Technology
Tokyo, Japan

11. *Dechema-Literatur Schnelldienst (DECHEMA-literature rapid service)*,
published by DECHEMA Informationsabteilung
Frankfurt/Main, Federal Republic of Germany

12. *Ekspress-Informatsiaa: Khimiia I Tekhnologiia Neorganicheskikh Veshchestv* (Express information: cheristry and technology of inorganic materials),
published by Mezhdunarodnaia Kniga
Moscow, Union of Soviet Socialist Republics

13. Ekspress Informatsiia: Protsessy I Apparaty Khimicheskikh
Proizvodstv, (Express information: processes and machinery
of chemical production)
published by Mezhdunarodnaia Kniga
Moscow, Union of Soviet Socialist Republics

14. *FAI Abstract Service*,
published by Fertiliser Association of India
New Delhi, India

15. *Fertilizer Abstracts*,
published by Technical Library
Muscle Shoals, Alabama, United States of America

16. *German Patents Abstracts: Chemical Only*,
published by Derwent Publications Ltd
London, England

17. *Hungarian Technical Abstracts*,
published by Hungarian Central Technical Library and
Documentation Centre:
Budapest, Hungary

18. *Industry Reports: Chemical (1)*,
Published by Government Printing Office,
Washington, D.C., United States of America

19. *ION: Revista Espanola de Quimica Aplicada*,
published by Sindicato nacional de Industrias Quimicas
Madrid, Spain

20. *Japanese Patent Report*,
published by Derwent Publications,
London, England

21. *Key to Turkish Science: Chemistry*.
Published by Turdok
Ankara, Turkey

22. *Muszaki Lapszemle: Kemia; Vegyipar*. (Technical abstracts: chemistry; chemical industry).
published by Hungarian Central Technical Library and Documentation Centre,
Budapest, Hungary

23. *Netherlands Patents Report*.
Derwent Publication Ltd
London, England

24. *NPKS Abstracts Bulletin*.
published by British Sulphur Corporation Ltd.,
London, England

25. *Referatekartei: Pflanzenernaehrung und -Duengung*.
(Card-file service: plant nutrition and fertilizing).
published by Deutsche Akademie der Landwirtschaftswissenschaften zu Berlin
Berlin, German Democractic Republic

26. *Referativnyi Zhurnal: Khimicheskoe I Kholodilnoe Mashinostroenie*. (Abstracts journal: chemistry and refrigeration machine-building).
published by Akademiia Nauk SSR
Moscow, Union of Soviet Socialist Republics

27. *Referatinyi Zhurnal: Khimiia; Tehnologiia Neorganicheskikh Veshchestv*.(Abstracts journal: chemistry; technology of inorganic materials)
published by Akademiia Nauk SSSR
Moscow, Union of Soviet Socialist Republics

28. *Resumenes de Articulos Cientificos y Tecnicos: Serie A. Quimica Industrial.*
published by Centro de Información y Documentación (CID)
Madrid, Spain

29. *Revista de Titluri: Chimie* (Title review: chemistry).
published by Institutul National de Informare si Documentare Stiintifica si
Bucharest, Romania

30. *Search: Fertilizers Division.*
published by Compendium Publishers International Corp.
Fort Lee, New Jersey, United States of America

31. *Soils and Fertilizers: Abstracts of World Literature.*
published by Commonwealth Agriculture Bureaux
Farnham Royal, Bucks, England

32. *Soviet Inventions Illustrated: Chemical Section.*
published by Derwent Publications Ltd.
London, England

33. *Update: Agricultural Chemicals.*
published by Information Company of America
Philadelphia, Pennsylvania, United States of America

34. *Verfahrenstechnische Berichte.* (Chemical and process engineering abstracts)
published by Verlag Chemie GmbH
Weinheim, Federal Republic of Germany

35. *ZIID-Referatekartei: Anorganisch-Chemische Grundstoffindustrie.* (ZIID-card reference file: anorganic chemical materials industry)
published by Zentralinstitut für Information and Dokumentation
Berlin, German Democratic Republic

IV-C THE BUILDING AND CONSTRUCTION INDUSTRY

THE ARIANE SYSTEM

The ARIANE System, developed by CATED, the Federation of French Building and Construction Industries, is an interlinked system of data banks covering all aspects of information required by the building and construction industry in France. For example, it will provide data on manufacturers' products, the correct type of material to use in meeting specific requirements, and on the legal and regulatory aspects of construction problems. ARIANE acts as the basic information resource for several regional centres, including the main centre in Paris, where enquirers can request a search to answer a specific problem. The actual search is conducted by an intermediary interacting with the ARIANE data bases held on a central computer. While the content of the data base is naturally concerned with products available in France and with the French regulatory machinery in the building and construction industries, the system itself is quite general in character and could be used to provide the same sort of enquiry possibilites in other geographical or subject areas; this would naturally require the building up of an equivalent series of data bases.

BUILDING SERVICES RESEARCH AND INFORMATION ASSOCIATION

BSIRA of Bracknell, U.K. operates an advisory and consultancy service for its members on all aspects of the building services industry. It also publishes:-

Thermal Abstracts

This journal covers all literature relevant to heating, ventilation, air conditioning etc. It is compiled under the auspices of the Documentation Committee of the European Heating and Ventilation Association. The annual growth rate is about 1200 items a year.

Other Publications include application notes, laboratory reports, information circulars, technical notes and bibliographies.

THE CEMENT AND CONCRETE INDUSTRIES

This is covered by UNIDO Guide No.2(revised). The following abstracting and indexing journals are listed:-

1. Abstracts and Index Publications for the Building Industry,
   published by Institute för Byggdokumentation
   Stockholm, Sweden
2. Building Abstracts Service,
   published by Vyskumny Ustav Vystavby a Architektury,
   Prague, Czechoslovakia
3. Building Science Abstracts,
   published by Her Majesty's Stationery Office
   London, England
4. Bulletin Analytique Du Cerilh,
   published by Centre d'études et de recherches de l'industrie
   des liants hydrauliques
   Paris, France
5. Bygglitteratur: Building Abstract Service,
   published by Institute för Byggdokumentation
   Stockholm, Sweden

6. Byggreferat, (Building abstracts)
published by Institutet för Byggkokumentation
Stockholm, Sweden

7. Canadian Building Abstracts/Analyses Sur la Construction Canadienne,
published by National Research Council of Canada,
Ottawa, Canada

8. C.B.R.I. Abstracts,
Published by Central Building Research Institute,
Roorkee, U.P., India

9. Chemical Abstracts,
published by Chemical Abstracts Service
Columbus, Ohio, United States of America

10. CIRIA Index of Technical Publications,
published by Construction Industry Research and Information Association,
London, England

11. Concrete Abstracts,
published by American Concrete Institute,
Detroit, United States of America

12. Concrete Products: Overseas Developments
published by Maclean-Hunter Publishing Company,
Chicago, United States of America

13. C.R.I. Abstracts,
published by Cement Research Institute of India,
New Delhi, India

14. Informator Postepu Techniczno-Ekonomicznego W Budownictwie (A guide to technical and economic advances in building)
published by Instytut Organizacji i Mechanizacji Budawnictwa
Warsaw, Poland

15. Journal of the American Concrete Institute: Current Reviews,
published by American Concrete Institute
Detroit, United States of America

17. Polish Building Abstracts/Documentation Polonaise de la Construction/Polnische Dokumentation Fuer Bauwesen,
published by Centralny Osroden Informacji Budownictwa
Warsaw, Poland

18. Schrifttumkartei Beton (Concrete card abstracts),
published by Wilhelm Ernst und Sohn KG
Berlin, Federal Republic of Germany

19. Zement, Kalk, Gips Schrifttumskartei (Cement, lime, gypsum card abstracts)
published by Bauverlag GmbH
Wiesbaden, Federal Republic of Germany

BUIDLING BOARD INDUSTRY

Information sources in building boards from wood and other fibrous materials are covered in UNIDO Guide No.9. The following abstracting and indexing journals are listed:-

1. Bulletin Bibliographique du Centre Technique du Bois (CTB),
published by Centre technique du bois (CTB)
Paris, France

2. Drevarska Dokumentacia (Documentation on wood),
published by Statni Drevarsky Vyskumny Ustav
Bratislava, Czechoslovakia

3. Kartoteki Po Problemi: Darvoobrabotvasta I Mebelna Promislenost, (Abstracts on problems: Wood processing and furniture industry)
published by Academy of Agricultural Sciences in Bulgaria
Sofia, Bulgaria

4. Litteratur Utdrag for Sponplateindustrien, (Literature abstracts for the particle board industries)
published by Norsk Treteknisk Institutt
Oslow, Norway

5. Litteratur Utdrag: Generelt, (Literature abstracts - General)
published by Norsk Treteknisk Institutt
Oslo, Norway

6. Mueszaki Lepszemle, Faipar, Papir-És Nyomdaipar (Technical abstracts, wood-working industry- paper and printing industry)
published by Orszagos Műszaki Kőnyvtár és Dokumentációs
Kőzpont Reviczky utca 6
Budapest, Hungary

7. Oesterreichisches Holzforschunginstitut. Schrifttums-Karteidienst
published by Oesterreichisches Holzforschungsinstitut
Vienna, Austria

8. Prehlad Lesnickej, Drevarskej, Cellulozovej a Papierenskej Literatury,
published by Statni Drevarsky Vyskumny Ustav
Bratislava, Czechoslovakia

9. Wood Products Industry Abstract Bulletin,
published by Engineering Extension Service,
Pullman, Washington, United States of America

GERMAN DEMOCRATIC REPUBLIC REVIEW CARDS - BIBLIOGRAPHY / BUILDING INDUSTRY

published monthly by the Building Academy of the GDR, Berlin, GDR, (in German language).

IV-D THE CERAMICS INDUSTRY

Information sources in the ceramics industry is covered in UNIDO Guide No.17. The following abstracting and index journals are listed:-

1. Bilten Dokumentacije: Silikatna Industrija, (Bulletin of documentation: glass, ceramic and refractory industries) published by Yugoslav Centre for Technical and Scientific Documentation
   Belgrade Yugoslavia
2. Biuletyn Informacyjny, (Bulletin of information)
   Published by Instytut Przemsylu Szkla i Ceramiki
   Warsaw, Poland
3. British Ceramic Abstracts,
   published by British Ceramic Research Association
   Stoke-on-Trent, England
4. Bulletin de Documentation Ceramique,
   published by l'institut de ceramique francaise
   Sevres, France
5. CGCRI Documentation List,
   published by Central Glass and Ceramic Research Institute,
   Calcutta, India
6. Ekspress-Informatsiia: Silikatnye Stroitel'Nye Materialy,
   (Express information; silicate construction materials)
   published by Mezhdunarodnaia Kniga,
   Moscow, Union of Soviet Socialist Republics
7. Ekspress-Informatsiia: Steklo, Keramika I Ogneuporty,
   (Express information glass, ceramic and refractory materials)
   published by Mezhdunarodnaia Kniga
   Moscow, Union of Soviet Socialist Republics

8. Journal of the American Ceramic Society,
published by the Journal of the American Ceramic Society
Columbus, Ohio, United States of America

9. Resumenes de Articulos Cientificos y Tecnicos,
published by Centro de Informacion y Documentacion
Madrid, Spain

10. Search: Non-Metallic Minerals Divison,
published by Compendium Publishers International Corporation
Fort Lee, New Jersey, United States of America

11. Zeitschriftenschau Keramik: Schnellinformation Fuer Die Gesamte Sintertechnik, Survey of periodicals in ceramics: quick information on the whole range of sinter technologies
published by Kombinat VEB Keramische Werke Hermsdorf
Hermsdorf, German Democratic Republic.

IV-E THE CLOTHING INDUSTRY

GERMAN DEMOCRATIC REPUBLIC REVIEW CARDS - BIBLIOGRAPHY / TEXTILE MACHINES

published by the Institute for Textile Machines, Department of Documentation, Karl-Marx-Stadt, GDR, (in German language).

Other information sources in the clothing industry are covered in UNIDO Guide No. 12. The following abstracting and indexing journals are listed:

1. Bilten Dokumentacije - Industrija Tekstila i Papira
   published by Jugoslovenski Centar za Tehničku i Naučnu
   Dokumentaciju
   Belgrade, Yugoslavia
2. Bulletin de l'Institut Textile de France
   published by Institut textile de France
   Service de documentation
   Paris, France
3. Chemical Abstracts - 39: Textiles,
   published by Chemical Abstracts Service,
   American Chemical Society,
   Columbus, Ohio, U.S.A.
4. Exspress Informatsiia: Tekstil'naia Promyshlennost' (Express information - textile industry)
   published by Mezhdunarodnaia Kniga, Moscow, USSR.

5. *Hosiery Abstracts*,
published by Hosiery and Allied Trades Research Association
(HATRA) , Nottingham, U.K.

6. *Informacionen Bjuletin: Leka Promishlenost* (Information
bulletin - textile)
published by Centralen Institut po Naucno
Tehniceska Informacija
Sofia, Bulgaria

7. *Internationales Textil-Bulletin: Weltausgabe - Strickerei/
Wirkerei/Konfektion* (International textile bulletin -
knitting and clothing)
published by Textile Service GmbH
Zurich, Switzerland

8. *Müszaki Lapszemle, Textilipar, Bör és Börfeldolgozoipar*
(Technical abstracts - Textile, leather and tanning
industries)
published by Országos Müszaki Könyvtár es Dokumentációs
Kózpont
Budapest VIII, Hungary

9. *Referativnyi Zhurnal - Legkaia Promyshlennost'* (Abstract
journal - textile industry)
published by Vsesoiuznyi Institut Nauchnoi i Tekhnicheskoi
Informatsii (VINITI)
Moscow, USSR

10. *Search: Textiles*
published by Compendium Publishers International Corporation
Port Lee, New Jersey, U.S.A.

11. Shirley Institute Summary of Current Literature and Textile Abstracts, superseded by World Textile Abstracts
published by Institute of Textile Technology,
Charlottesville, Virginia, U.S.A.

12. World Textile Abstracts,
published by the Shirley Institute
Manchester, U.K.

13. ZIID - Referatekarteien - Zentralinstitut fuer Information und Dokumentation - Faserstoffe und Textiltechnik (Reference card file - Central institute for information and documentation - Synthetics and textile technology)
published by Zentralinstitut fuer Information and Dokumentation (ZIID)
Abteilung Druck und Vertrieb
Berlin, G.D.R.

14. ZIID - Referatekarteien - Zentralinstitut fuer Information und Dokumentation - Textilmaschinen (Reference card file - Central institute for information and documentation - Textile machinery)
published by Zentralinstitut fuer Information und Dokumentation (ZIID)
Abteilung Druck und Vertrieb
Berlin, G.D.R.

In addition to Hosiery Abstracts, the British Hosiery and Allied Trades Research Association (HATRA) also produces special reports, information sheets, bibliographies, publication notes, research reports, special publications, translations, etc. HATRA has also specialized in the production of audiovisual tapes for technology transfer and training purposes. Most HATRA products are available to non-members of the Association.

The U.K. Shoe and Allied Trades Research Association (SATRA) also produces an abstract journal, entitled "Footware Digest". This Association also produces a number of other publications such as research reports, manuals, technical news such as the "The World Footware Industries Statistical Review", the Shoe Machinery Dictionary, conference proceedings, etc.

IV-F COMPUTERS AND ELECTRONICS

COMPUTER TECHNOLOGY INDEX

This is a machine-readable data-base, produced by Iowa State University, Ames, Iowa, USA, covering selected journal literature, theses and reports relevant to computer technologies. The size of the data-base is over 15,000 items.

NATIONAL COMPUTING CENTRES, INFORMATION SERVICES ON COMPUTING INFORMATION

The UK National Computing Center at Manchester has prepared machine-readable data bases on computing hardware, computing software, literature, education and training. The literature data-base contains 22,000 items; services are available to non-members.

EQUIPMENT MARKET ABSTRACTS

This information system, also known as electronics and equipment market abstracts, is produced by PREDICASTS Inc. of Cleveland, Ohio, USA, and is available both in printed and machine-readable forms. It provides worldwide coverage and digests of all literature significant to the electronics market such as computers, communications systems and equipment, consumer electronics, aerospace, etc. The machine-readable data-base is available for on-line interrogation over TYMNET and Telenet by Lockheed Information Systems.

ELECTRONIC COMPONENTS DATA-BANK

This data-bank, established by the European Space Agency (ESA), contains full details of some 20,000 high reliability electronic components. Components are entered according to their type, specification and performance. Details are given of manufacturers and agents, and test data is included. The machine-readable version of the data-bank may be searched interactively, and the search facility includes the possibility of searching on numerical values. A printed version is also produced, together with drawings of the components listed. The data-bank may be interrogated on-line over ESANET.

ELECTRONIC PROPERTIES INFORMATION CENTER

This system is an enhanced machine-readable version of the electronics properties of materials -- A Guide to the Literature, volumes I to III; it is produced by the Center for Information and Numerical Data Analysis and Synthesis of West Lafayette, Indiana, USA. It covers the world open literature of electronic properties of materials including also electrical, magnetic and optical properties. The present size of the data-base is about 75,000 items. The center carried out searches for its clients and produces special bibliographies periodically.

HUNGARIAN KWIC INDEX / COMPUTING AUTOMATION

This index is a periodical of the Hungarian Central Technical Library and Documentation Centre (HCTLD), Budapest, Hungary. It contains Hungarian and foreign articles, news, patents, standards, trade, literature, etc.

IV-G ELECTROTECHNOLOGY

ELECTRICAL RESEARCH ASSOCIATION

ERA of Leatherhead, U.K., publish a series of reports dealing with all aspects of electrotechnology, including reports on research by the Association itself, marketing studies etc. These are available for purchase by non-members.

No abstract journal is published, ERA operates a technical and commercial question-answering service, and publishes a news bulletin.

ZDE - Datenbasis

ZDE is produced by Zentralstelle Dokumentation Elektrotechnik e.V. beim VDE, Offenbach/Main, FRG. It covers the field of electro technology. The file contains 278.000 references with a growth rate of 60,000 references per year.

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / ELECTRICAL ENGINEERING

This journal is published monthly by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary, (in Hungarian language).

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / TELECOMMUNICATION

It is also published monthly by HCTLDC, Budapest, Hungary, (in Hungarian language).

IV-H FLUID ENGINEERING

BRITISH HYDROMECHANICS RESEARCH ASSOCIATION

BHRA of Bedford, U.K., operates an extensive information service in all aspects of fluid engineering and its applications. In particular, it publishes a series of ten abstract journals covering the literature in the following areas:

- International Dredging Abstracts,
- Fluid Flow Measurements Abstracts,
- Solid-Liquid Flow Abstracts,
- Pumps and Other Fluids Machinery Abstracts,
- Civil Engineering Hydraulics Abstracts,
- Fluid Power Abstracts,
- Abstracts on Friction, Lubrication, Wear
- Fluidics Feedback
- Fluid Sealing Abstracts
- Industrial Aerodynamics Abstracts

BHRA is currently preparing a machine-readable database of the material; tape versions and an on-line system will be available.

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / CIVIL AND HYDRAULIC ENGINEERING

This journal is published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary, (monthly, in Hungarian language).

IV-I FOOD INDUSTRIES

FOOD SCIENCE AND TECHNOLOGY ABSTRACTS (FSTA)

This data-base (in its machine-readable and printed versions), is the main source of information for the whole group of food processing industries. It is a product of the International Food Information Service, a collaborative organization with inputting centers in several different countries. The UK IFIS center at Shinfield is responsible for collection, abstracting and indexing, while the German center (Frankfurt) is responsible for computer processing, production of the machine-readable version and the printed version. An on-line version of the data-base has been prepared and interactive interrogation will be possible over EURONET.

The size of the data-base is about a 120,000 items, with a growth rate of 17,000 items per year. The machine-readable data-base is processed for batch searching by a number of organizations, including RIT (Stockholm) and DTB (Kopenhagen).

CDIUPA

CDIUPA/IALINE covers food science, technology and economics. It is produced by C.D.I.U.P.A. (Centre de Documentation des Industries Utilisatrices de Produits Agricoles), Massy, France. The data-base contains about 100,000 references, with a growth rate of 12,000 items per year.

G.D.R. BIBLIOGRAPHY OF FOOD INDUSTRY

This bibliography is an irregular publication of the Central Institute of the Ministry for District Controlled Industry and Food Industry (Division Information and Documentation), Berlin, GDR. The literature covers:-

- Economics
- Grain, Grain Products, Spices
- Drinks
- Sweets, Artificial Honey, Coffee, Tea.

It is published in German.

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / FOOD INDUSTRY

This journal is published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary, (monthly, in Hungarian language).

There are at present 4 Guides in the UNIDO Series relating to sections of the food industry. They are:-

THE MEAT PROCESSING INDUSTRY

This is covered by Guide No. 1, in which the following abstracting and indexing services are noted:-

1. Abstracts from Current Scientific and Technical Literature published by British Food Manufacturing Industries Research Association, Leatherhead, Surrey, U.K.

2. Animal Breeding Abstracts
published by Commonwealth Agricultural Bureau
Farnham Royal, Bucks., U.K.

3. Bilten Dokumentacije: Prehrambena Industrija (Bulletin of documentation: food industry),
published by Yugoslav Centre for Technical and Scientific Documentation
Belgrade, Yugoslavia

4. Bulletin Analytique,
published by Institut Appert (Institut national de la conserve)
Paris, France

5. Bulletin Bibliographique de CDIUPA,
published by Centre de documentation des industries utilisatrices de produits agricoles (CDIUPA)
Massy, France

6. Bulletin de l'Institut International du Froid,
published by Institut International du Froid
Paris, France

7. Bulletin Signaletique, Part 380: Agronomie, Zoo-Technie, Phytopathologie, Industries Alimentaires,
published by Centre national de la recherche scientifique
Paris, France

8. Ekspress-Informatsiia: Miasnaia I Molochnaia Promyshlennost'
(Express information: meat and dairy industris)
published by Mezhdunarodnaia Kniga
Moscow, USSR

9. Food Processing Abstracts
published by Lowry-Cocroft Abstracts
Evanston, Illinois, U.S.A.

10. Landwirtschaftliches Zentralblatt: Tierzucht, Viehernaehrung, Fischerei (An agricultural abstracting journal: animal-breeding, livestock feeding, fisheries)
published by Institut fuer landwirtschaftliche Information and Dokumentation
Berlin, G.D.R.

11. Nutrition Abstracts and Reviews
published by Commonwealth Agricultural Bureaux
Farnham Royal, Bucks., U.K.

12. Prehledy Potravinarske Literature (Survey of food literature)
published by Stredisko Technickych Informacii Potravinarskeho Prumyslu
Prague, Czechoslovakia

13. Referativnyi Zhurnal: Oborudovanie Pishchevoi Promyshlennosti (Abstracts journal: equipment for the food industry)
published by Akademiia Nauk SSR, Institut Nauchnoi Informatsii
Moscow, USSR

14. Search: Foodstuffs Division
published by Compendium Publishers International Corporation
Fort Lee, New Jersey, U.S.A.

15. Technical Information Center Bulletin
published by National Association of Meat Purveyors
Chicago, Illinois, U.S.A.

16. Zeitschrift fuer Lebensmittel: Untersuchung und Forschung
(Journal for food testing and research)
published by Springer Verlag,
Berlin, F.R.G.

17. Zentraler Dokumentationsdienst Sozialistischer Laender: Nahrung und Ernaehrung (Central documentation service of the socialist countries: food and nutrition)
published by Institut fuer Ernaehrung der Deutschen Akademie der Wissenschaften
Berholz-Rehrucke, Potsdam, G.D.R.

THE NON-ALCOHOLIC BEVERAGE INDUSTRY

This is covered by Guide No. 15, in which are listed the following abstracting and indexing services:

1. Abstracts from Current Scientific and Technical Literature
published by The British Food Manufacturing Industries Research Association,
Leatherhead, Surrey, U.K.

2. Bilten Dokumentacije: Prehrambena Industrija (Bulletin of documentation: food industry)
published by Jugoslovenski Centar za Tehničku i Naučnu Dokumentaciju
Belgrade, Yugoslavia

3. Brauwissenschaft (Brewing technology)
published by Verlag Hans Carl KG
Nuremberg, F.R.G.

4. Bulletin Signaletique. Section 18: Sciences Agricoles, Zoo-Technie, Phytiatrie et Phytopharmacie, Aliments et Industries Alimentaires,

published by Centre de Documentation
Centre National de la Recherche Scientifique
Paris, France

5. Chemical Abstracts. Section 20: Food Industry
published by Chemical Abstracts Service
American Chemical Society
Columbus, Ohio, U.S.A.

6. Food Processing Abstracts
published by Lowry Cocroft Abstracts
Evanston, Illinois, U.S.A.

7. Fruchtsaft-Industrie Vereinigung mit CONFRUCTA, Internationale Zeitschrift fuer Verarbeitung und Untersuchung von Fruechten (Fruit juice industry in association with CONFRUCTA, international journal for fruit processing and research)
published by Sigurd Horn Verlag KG
Frankfurt/Main, F.R.G.

8. Journal of Food Science and Technology
published by Association of Food Technologists
c/o Central Food Technological Research Institute (CFTRI)
Mysore, India

9. Müszaki Lapszemle: Elelmiszeripar (Technical Abstracts: food industry)
published by Országos Müszaki Könyvtár és Dokumentációs Kozpont
Budapest, Hungary.

10. Revista de Referate: Technologie Pastrarii si Valorificarii Lecumelor si Fructelor (Abstract journal: vegetable and

fruit technology)
published by Centrul de Documentare Agricola
Institutul Central de Cercetari Agricole
Bucharest, Romania

11. Search: Foodstuffs Division
published by Compendium Publishers International Corporation
Fort Lee, New Jersey, U.S.A.

12. Tropical Abstracts
published by Royal Tropical Institute
Tropical Products Department
Amsterdam, Netherlands

13. Zentraler Dokumentationsdienst Sozialistischer Laender: Nahrung und Ernaehrung, Gaerung und Getraenke (Central documentation service of socialist countries: food and nutrition, fermented products and beverages)
published by Institut fuer Ernaehrung der Deutschen Akademie der Wissenschaften,
Berholz-Rehrucke, Potsdam, G.D.R.

14. ZIID Referatekarteien: Obst und Gemueseverarbeitung (ZIID reference card file: fruit and vegetable processing)
published by Zentralinstitut fuer Information und Dokumentation (ZIID)
Abteilung Druck und Vertrieb
Berlin, G.D.R.

THE CANNING INDUSTRY

This is covered by UNIDO Guide No. 19, in which are listed the following abstracting and indexing services:

1. Abstracts from Current Scientific and Technical Literature
   published by British Food Manufacturing Industries Research Association (BFMIRA)
   Leatherhead, Surrey, U.K.
2. Bilten Dokumentacije: Prehrambena Industrija (Bulletin of documentation: food industry)
   published by Jugoslovenski Centar za Tehničku i Naučnu Dokumentaciju
   Belgrade, Yugoslavia
3. Bulletin Analytique
   published by Institut Appert (Institut National de la Conserve)
   Paris, France
4. Bulletin Bibliographique de CDIUPA
   published by Centre de Documentation des Industries Utilisatrices de Produits Agricoles (CDIUPA)
   Massy, France
5. Bulletin Signaletique. Section 18: Sciences Agricoles, Zootechnie, Phytiatrie et Phytopharmacie, Aliments et Industries Alimentaires,
   published by Centre National de la Recherche Scientifique
   Centre de Documentation
   Paris, France

6. Commercial Fisheries Abstracts
   published by Bureau of Commercial Fisheries
   Seattle, Washington, U.S.A.
7. Documentation List for Food Technology
   published by Central Food Technological Research Institute
   Mohalla, Mysore, India
8. ETH Abstracting Service: Radiation on Food
   published by Eidgenoessische Technische Hochschule,
   Bibliothek
   Zurich, Switzerland
9. Food Processing Abstracts
   published by Lowry Cocroft Abstracts
   Evanston, Illinois, U.S.A.
10. Food Technology Abstracts
    published by Central Food Technological Research Institute
    (CFTRI)
    Mohalla, Mysore, India
11. Journal of Food Science and Technology
    published by Association of Food Scientists and Technologists
    Mohalla, Mysore, India
12. Journal of the Science of Food and Agriculture
    published by Society of Chemical Industry
    London, U.K.
13. Muszaki Lapszemle: Elemiszeripar (Technical abstracts:
    food industry)
    published by Országos Műszaki Könyvtár és Dokumentációs
    Központ
    Budapest, Hungary

14. Resumenes de Articulos Cientificos Y Tecnicos: Serie A. Quimica Industrial
published by Centro de Información y Documentación (CID)
Madrid, Spain

15. Revista de Referate: Technologie Pastrarii si Valorificarii Legumelor si Fructelor (Abstract journal: vegetable and fruit technology)
published by Centrul de Documentare Agricola
Institul Central de Cercetari Agricole
Bucharest, Romania

16. Search: Foodstuffs Division
published by Compedicem Publishers International Corporation
Fort Lee, New Jersey, U.S.A.

17. Tropical Abstracts
published by Royal Tropical Institute
Amsterdam, Netherlands

18. Zentraler Dokumentationsdienst Sozialistischer Laender: Nahrung und Ernaehrung (Central documentation service of socialist countries: food and nutrition)
published by Institute fuer Ernaehrung der Deutschen Akademie der Wissenschaften
Berholz-Rehrucke, Potsdam, G.D.R.

19. ZIID Referatekarteien: Obst und Gemueseverarbeitung (ZIID reference card file: fruit and vegetable processing)
published by Zentralinstitut fuer Information and Dokumentation (ZIID)
Berlin, G.D.R.

THE DAIRY PRODUCTS MANUFACTURING INDUSTRY

This is covered by UNIDO Guide No. 23, in which are listed the following abstracting and indexing services:

1. Abstracts from Current Scientific and Technical Literature
   published by British Food Manufacturing Industries
   Research Association
   Leatherhead, Surrey, U.K.
2. Biological and Agricultural Index
   published by H.W. Wilson Company,
   Bronx, New York, U.S.A.
3. Dairy Science Abstracts
   published by Commonwealth Bureau of Dairy Science
   Shinfield, Reading, U.K.
4. Food Processing Abstracts
   published by Lowry-Cocroft Abstracts
   Evanston, Illinois, U.S.A.
5. Food Technology Abstracts
   published by Central Food Technological Research Institute
   Mohalla, Mysore, India
6. Food Technology Digest
   published by National Dairy Products Corporation
   Glenview, Illinois, U.S.A.
7. Journal of the Science of Food and Agriculture
   published by Society of Chemical Industry
   London, U.K.
8. Le Lait
   published by SARL Le Lait
   Paris, France

9. *Landbouwdocumentatie* (Documentation on agriculture)
published by Centrum voor Landbouwpublikaties en
Landbouwdocumentatie
Wageningen, Netherlands

10. *Milchwissenschaft. Teil B: Milchwirtschaftlicher Informationsdienst/Milk Science International, Classified Milk Science Abstracts.*
published by Verlag Hans Carl KG
Nuremberg, F.R.G.

11. *Zentraler Dokumentationsdienst Sozialistischer Laender: Nahrung und Ernaehrung* (Central documentation service of socialist countries: food and nutrition)
published by Institut fuer Ernaehrung der Deutschen
Akademie der Wissenschaften,
Bergholz-Rehbruecke, Potsdam, G.D.R.

FLOUR-MILLING AND BAKING INDUSTRIES

The Flour-milling and Baking Research Association in the U.K. produces a number of publications for its members, one which is generally available, this is an abstracts journal covering cereals and cereal products, bakery materials, bakery processes and products, laboratory techniques, nutrition and pharmacology, microbiology, hygiene and plant and equipment.

IV-J THE GLASS INDUSTRY

Information sources in the glass industry are covered in UNIDO Guide No. 16. The following abstracting and indexing services are listed:-

1. Bilten Dokumentacije: Silikatna Industrija (Bulletin of documentation: glass, ceramic and refractory industries) published by Yugoslav Centre for Technical and Scientific Documentation
   Belgrade, Yugoslavia
2. Biuletyn Informacyjny
   Instytut Przemyslu Szkla i Ceramiki
   Warsaw, Poland
3. Boron in Glass
   published by Borax Consolidated Ltd.
   London, U.K.
4. CGCRI Documentation List
   published by Central Glass and Ceramic Research Institute
   Växjö, Sweden
5. Exspress-Informatsiia: Silikatnyie Stroitel'nyie Materialy (Express information: Silicate construction materials)
   published by Mezhdunarodnaya Kniga,
   Moscow, USSR
6. Exspress-Informatsiia: Steklo, Keramika I Ogneupory (Express information: Glass, ceramics and refractory materials)
   published by Mexhdunarodnaya Kniga,
   Moscow, USSR

7. Resumenes de Articulos Cientificos Y Tecnicos
published by Centro de Informacion y Documentacion
Madrid, Spain
8. Search: Non-Metallic Minerals Division
published by Compendium Publishers International Corporation
Fort Lee, New Jersey, U.S.A.

Note

The British Glas Industry Research Association, of Sheffield, U.K., operates an extensive information service in this field. Publications include research reports, technical notes, information circulars, literature reviews, a translation series, and a digest of information and patents review, etc.

IV-K THE INSTRUMENTATION INDUSTRY

THE SIRA INSTITUTE

The SIRA Institute in the UK has amassed a data-bank on instrumentation and automation as an internal tool for its consultancy service for this industry. The data-bank contains information about instruments themselves and their components. SIRA does not publish an abstract journal but issues regularly an alerting publication entitled "Measurement and Automation News", which is publically available.

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / PHYSICS, MEASUREMENT AND INSTRUMENT TECHNOLOGY, AUTOMATION

This journal is published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary, (monthly, in Hungarian language).

IV-L THE LEATHER GOODS INDUSTRY

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / TEXTILE INDUSTRY, LEATHER AND LEATHER PROCESSING INDUSTRY

This journal is published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary, (monthly, in Hungarian language).

Other Information sources in this industry are covered in Guide No. 3 of the UNIDO Series, in which the following abstracting and indexing services are noted:-

1. Bibliographie Analytique et Signaletique (Technicuir)
   published by Centre Technique du Cuir
   Lyon, France
2. Chemical Abstracts - Section 41 - Leather and Related Materials
   published by Chemical Abstracts Service - Division of the American Chemical Society
   Ohio State University
   Columbus, Ohio, USA
3. Current Leather Literature
   published by Central Leather Research Institute
   Adyar, Madras, India

4. Exspress-Informatsiia. Kozhevenno-Obuvnaia Promyshlennost'
(Express-Information. Leather and Shoe Industry)
published by Mezhdunarodnaia Kniga
Moscow, USSR

5. Footwear and Leather Abstracts
published by Information Retrieval Ltd.
London, U.K.

6. Müszaki Lapszemle. Textilipar. Bör- es Börfeldolgozó Ipar
published by Országos Müszaki Könyvtár es Dokumentációs
Központ, Budapest, Hungary.

7. Referativnyi Zhurnal. Legkaia Promyshlennost'
(Abstract Journal. Light Industry)
published by Mexhdunarodnaia Kniga
Moscow, USSR

IV-M THE MACHINE TOOL INDUSTRY

GERMAN DEMOCRATIC REPUBLIC REVIEW CARDS - BIBLIOGRAPHY / MACHINE TOOLS AND TOOL CONSTRUCTION

This bibliography is published monthly by the Research Center of the Machine Tool Co., Department of Information and Documentation, Karl-Marx-Stadt, GDR, (in German language).

Other information sources in the machine tool industry are covered in UNIDO Guide No. 22, in which the following abstracting and indexing services are listed:-

1. Abstracts of Bulgarian Scientific Literature: Industry, Building and Transport
   published by Central Institute for Scientific, Technical, Economical and Social Information
   Sofia, Bulgaria
2. Applied Mechanics Reviews
   published by American Society of Mechanical Engineers
   New York, N.Y., U.S.A.
3. Applied Science and Technology Index
   published by H.W. Wilson Co.
   Bronx, New York, U.S.A.
4. Bilten Dokumentacije: Masinska Tehnologija i Radne Masine (Bulletin of documentation: mechanical technology and tooling)

published by Yugoslav Centre for Technical and Scientific Documentation
Belgrade, Yugoslavia

5. Bilten Dokumentacije: Pogonske Masine i Masinski Delovi
(Bulletin of documentation: power engines and machine parts)
published by Yugoslav Centre for Technical and Scientific Documentation, Belgrade, Yugoslavia.

6. British Technology Index
published by Library Association
London, U.K.

7. Bulletin de Documentation
published by Societe ALSTHOM
Paris, France

8. Bulletin Signaletique: Sciences de l'Ingenieur
published by Centre de documentation
Centre National de la Recherche Scientifique
Paris, France

9. Current Bibliography on Science and Technology: General and Mechanical Engineering
published by Japan Information Center of Science and Technology
Tokyo, Japan

10. Czechoslovak Science and Technology Digest
published by Scientific Information Consultants
London, U.K.

11. Documentare Tehnica, Section V: Mettallurgie si Constructie de Masini (Technical documentation, Section V: mechanical engineering and metallurgy)
published by Institutul de Documentare Tehnica
Bucharest, Romania

12. Exspress Informacja Instytutu Obrobki Skrawaniem
published by Instytut Obrobki Skrawaniem
Cracow, Poland

13. Engineering Index
published by Engineering Index Inc.
New York, N.Y. U.S.A.

14. Figyelokarton Szolgalat (Card index service)
published by Orszázos Müszaki Konyvtár és Dokumentációs Központ
Budapest, Hungary

15. Information Service in Mechanical Engineering
published by Institution of Mechanical Engineers
London, U.K.

16. Japan Science Review: Mechanical and Electrical Engineering
published by Joint Publication Committee of Engineering Societies
Tokyo, Japan

17. Literatuuroverzicht (Review of literature)
published by Samenwerkende Werkplaatstechnische Documentatiediensten
Delft, Netherlands

18. Mechanical Sciences Abstracts
published by Scientific Information Consultants
London, U.K.

19. Metals Abstracts
published by Metals Abstracts Trust
Institute of Metals
London, U.K.
or by American Society of Metals,
Metals Park, Ohio, U.S.A.

20. Referate fuer den Maschinenbau (Abstracts for machine building)
published by Carl Schenk Maschinenfabrik GmbH
Darmstadt, F.R.G.

21. Referativnyi Zhurnal: Mashinostroitel'nye Materialy, Konstruktsii i Raschet Detalei Mashin Gidroprivod; Mehanika: Tehnologija Mashinostroenija (Technical abstracts: materials for mechanical engineering, machine elements; mechanics: mechanical engineering)
published by Mezhdunarodnaia Kniga
Moscow, USSR

22. Schede di Documentazione (IDAMI) (Documentation card index of the Italian mechanics association)
published by Istituto di Documentazione della Associazione Meccanica Italiana
Milan, Italy

23. VDMA: Literaturkartei (Card index of the association of German mechanical engineering establishments)
published by Verein Deutscher Maschinenbau-Anstalten (VDMA)
Duesseldorf-Oberkassel, F.R.G.

IV-N NON-FERROUS METALS INDUSTRY

BNF-METALS TECHNOLOGY CENTER

The UK's BNF-Metals Technology Center operates a wide range of information and inquiry services to its membership in the non-ferrous metals industry. For this purpose it has established a computer data-base on non-ferrous metallurgy: the bibliographic section of this data-base contains some 60,000 abstracts and results in the publication of BNF Abstracts covering the world literature in the field. A magnetic tape version is available. Computer search services may also be provided.

The center's inquiry service deals with a wide range of questions which go beyond bibliographic searching; they relate to alloy compositions, processes, alloy properties, physical data and statistics. This has resulted in a large stock of information of a factual kind, and this part of the data-bank is now also being computerized.

IV-O THE PAINT- AND SURFACE COATINGS INDUSTRY

Information sources in this industry are covered in UNIDO Guide No. 18, in which are listed the following abstracting and indexing services:

1. Abstract Review
   published by National Paint, Varnish and Lacquer Association
   Washington D.C., U.S.A.
2. Abstract Review
   published by Research Association of British Paint, Colour and Varnish Manufacturers
   Teddington, Middlesex, U.K.
3. Chemical Abstracts. Section 42: Coatings, Inks and Related Products.
   published by Chemical Abstracts Service
   American Chemical Society, the Ohio State University
   Columbus, Ohio, U.S.A.
4. Digest des Revues Techniques
   published by Industrie des vernis, peintures, mastics, encres d'imprimerie et couleurs d'art
   Brussels, Belgium.
5. Journal of the Society of Dyers and Colourists
   published by the Society of Dyers and Colourists
   Bradford, Yorkshire, U.K.
6. Literatuur Referatendienst (Abstracting journal)
   published by Verfinstituut, TNO; Delft, Netherlands.

7. Litteraturoeversigt (Abstracts journal)
published by Svenska Färgindustrins Forskningslaboratorium
(Swedish paint industry research laboratory)
Stockholm, Sweden

8. Metal Finishing Abstracts
published by Finishing Publications Ltd.
Hampton Hill, Middlesex, U.K.

9. Monatliche Titelzusammenstellung: Zeitschriftentitel
(Monthly collection of journals)
published by Institut fuer Lacke und Farben
Magdeburg, G.D.R.

10. Oberflaechenschutz durch Anstrich (Surface protection by coating)
published by Zentralinstitut fuer Information und Dokumentation (ZIID)
Berlin, G.D.R.

11. Paint and Resin Patents
published by R.H. Chandler Ltd.
Braintree, Essex, U.K.

12. Paint-Colour-Varnish
published by International Press Cutting Service
Allahabad, India

13. Patents on UV Paint Curing
published by R.H. Chandler Ltd.
Braintree, Essex, U.K.

14. Referatedienst Farbe (Abstracting journal of paint)
published by Musterschmidt Verlag
Goettingen, F.R.G.

15. Search: Dyes, Pigments and Coatings Division
published by Compendium Publishers International Corp.
Fort Lee, New Jersey,
U.S.A.

16. Svenska Faergindustrins Forskningslaboratorium (Swedish paint industry research laboratory)
published by Svenska Fårgindustrins Forskningslaboratorium
Stockholm, Sweden

17. Teintex: Revue Generale des Matières Colorantes
published by Teintex
Paris, France

18. Tintori (Dyes)
published by Associazione Nazionale Industriali Tintori,
Stampatori e Finitori
Milan, Italy

19. Verzeichnis der Standards des Fachbereiches 107: Lacke und Farben (Index of standards of the specialized area 107: varnishes and paints)
published by Zentralstelle fuer Standardisierung Lacke und Farben
Leipzig, G.D.R.

20. World Surface Coating Abstracts
published by Research Association of British Paint,
Colour and Varnish Manufacturers
Teddington, Middlesex, U.K.

21. ZIID Referatekartei: Lacke, Farben, Anstrichtechnik (Abstracting journal: varnishes, paints and surface coating techniques)

published by Zentralinstitut fuer Information und
Dokumentation (ZIID)
Berlin, G.D.R.

IV-P THE PAPER AND PULP INDUSTRY

PAPERCHEM

covers the scientific and technical literature, including patents, of the pulp-, paper-, and board-manufacturing and utilizing industries gathered from all industrialized countries. Source documents include nearly 1,000 periodicals published in over 20 languages, patent gazettes of six major countries, symposium proceedings, and selected secondary sources.
It is produced by the Institute of Paper Chemistry.
The data-base is offered by SDC; it exists since January 1978 and contains approx. 12,000 records.

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / WOOD AND PAPER INDUSTRY, PRINTING

This journal is published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary, (monthly, in Hungarian language).

Other information sources on the pulp and paper industry are covered in UNIDO Guide No. 11, in which the following abstracting and indexing services are listed:-

1. Abstract Bulletin of the Institute of Paper Chemistry (ABIPC)
   published by Institute of Paper Chemistry
   Appleton, Wisconsin, U.S.A.

2. Association Technique de l'Industrie Papetière - Feuillets Bibliographiques
published by Association technique de l'industrie papetière
Paris, France

3. Bilten Dokumentacije - Industrija Tekstila i Papira
(Bulletin of documentation - textile and paper industry)
published by Jugoslovenski Centar za Tekhničvku i Naučvnu Dokumentaciju
Belgrade, Yugoslavia

4. Bulletin Signaletique. 800 Chimie Appliquee
published by Centre de documentation
Centre nationale de la recherche scientifique
Paris, France

5. Chemical Abstracts. Section 43: Cellulose, Lignin, Paper and other Wood Products
published by Chemical Abstracts Service
American Chemical Society, The Ohio State University
Colombus, Ohio, U.S.A.

6. Exspress-Informatsiia. Tselliulozno-Bumaznhaia Promyshlennost' (Express information. Pulp and paper industry).
published by Mezhdunarodnaia Kniga
Moscow, USSR

7. International Press Cutting Service: Paper-Pulp Board/Straw
published by International Press Cutting Service
Allahabad, India

8. Litteraturutdrag (Literature abstracts)
published by Papirindustriens Forskningsinstitutt
Vinderen-Oslo, Norway

9. Muszaki Lapszemle-Faipar, Papir-es Nyomdaipar (Technical abstracts, wood-working, paper and printing industry)
published by Országos Müszaki Kőnyvtar és Dokumentációs Kőzpont
Budapest, Hungary

10. Paper and Board Abstracts
published by The Research Association for the Paper and Board, Printing and Packaging Industries (PIRA)
Leatherhead, Surrey

11. Das Papier - Referatschau - Patentschau (Paper - review of articles and patents)
published by Schnell-Dokumentations-Karteidienst des Archivs Zellcheming
Darmstadt, F.R.G.

12. PIRA Marketing Abstracts
published by The Research Association for the Paper and Board, Printing and Packaging Industries (PIRA)
Leatherhead, Surrey, U.K.

13. Prehlad Lesnickei, Drevarskei, Cellulosovei a Papierenskei Literatury (Review of the forest, wood, cellulose and paper literature)
published by Státny Drevársky Výskumny Ustav
Bratislava, Czechoslovakia

14. Przeglad Papierniczy (Polish paper review)
    published by Exprim "Ruch"
    Warsaw, Poland

15. Referativnyi Zhurnal - Tekhnologiia i Oborvdovanie Tscelliulozno-Bumazhnogo i Poligraficheskogo Proizvodstva (Pulp and paper industry, printing industry abstract journal)
    published by Vsesoyuznyi Institut Nauchnoi i Tekhnicheskoi Informacii (VINITI)
    Moscow, USSR

16. Search: Pulp and Paper
    published by Compendium Publishers International Corp.
    Fort Lee, New Jersey, U.S.A.

17. ZIID - Referatekarteien - Zentralinstitut fuer Information und Dokumentation - Zellstoff und Papier (Reference card file - central institute for information and dokumentation - pulp and paper)
    published by Zentralinstitut fuer Information und Dokumentation (ZIID)
    Abteilung Druck und Vertrieb
    Berlin, G.D.R.

IV-Q THE PETROLEUM INDUSTRY

AMERICAN PETROLEUM INSTITUTE - ABSTRACTS OF REFINING LITERATURE (APILIT)

This data-base is both in printed and machine-readable forms, and is produced by the American Petroleum Institute, New York, U.S.A. It covers the world literature on petroleum refining and the petrochemicals industry; it is about 200,000 items in size with an annual growth rate of 18,000 items. The data-base is processed for on-line searching by the System Development Corporation, and is available for interrogation over TYMNET.

AMERICAN PETROLEUM INSTITUTE PATENT ALERT ABSTRACTS (APIPAT)

This data-base which exists in both machine-readable and printed forms is produced by the American Petroleum Institute, New York, U.S.A. It covers the world patent literature in areas relating to petroleum refining and the petrochemicals industry. The data-base is about 100,000 items in size with an annual growth rate of 8,000 items. The data-base is processed for on-line searching by the System Development Corporation, and is available for interrogation over TYMNET.

OLJE-INDEX

This data-base is produced by the Norsk-Senter for Informatik, Oslo, Norway. It covers journal articles, newspaper entries, books, government papers and patents in the field of oil prospecting and refining.

PETROLEUM ABSTRACTS

This data-base which exists in machine-readable and printed forms is produced by the University of Tulsa, Informations Services Department, Tulsa, Oklahoma, U.S.A. It covers the technical literature and patents relevant to the exploitation and production of gas and oil, geology, geophysics, geochemistry, drilling and reservoir engineering. The data-base is about 180,000 items in size with an annual growth rate of 16,000 items. The data-base is processed for on-line searching by the producer and System Development Corporation and is available for interactive interrogation over TYMNET.

P/E NEWS

This data-base is produced by the Central Abstracting Indexing Service of the American Petroleum Institute. It covers five major publications in the petroleum and energy fields: Platts Oilgram News Service; Middle East economic Survey; Petroleum Intelligence Weekly; Petroleum Economist; and Oil Daily. Extensive indexing by company and individual names, as well as location and subject. The data-base exists since January 1978; its annual growth rate is about 26,000 records per year.

IV-R THE PHARMACEUTICAL INDUSTRY

BIAM

BIAM (Banque d'Informations Automatisée sur les Medicaments) [Drug Automated Databank] provides general information on drugs, oriented to practical use - two logical files: Active Principles and Pharmaceutical Specialities.
The file exists since October 1977 and contains about 25 mill. characters (3,000 active principles and 8,500 specialities). The data-base is produced by Association BIAM, Paris.

INTERNATIONAL PHARMACEUTICAL ABSTRACTS (IPA Informations Systems)

This data-base is produced by ASHP (American Society of Hospital Pharmacists), Washington D.C., USA. It covers worldwide literature of pharmacy, medical and health-related publications for all articles relating to pharmacy or pharmaceuticals. The file contains 50,000 records with a growth rate of 6500 to 7000 records per year.

PHARMACEUTICAL NEWS INDEX (PNI)

Pharmaceutical News Index (PNI) is the on-line source of current information about the drug and cosmetic industries, with emphasis on the following subjects: Drug and Cosmetic Industry Management News, Health Legislation, Government Relations, Industry Financial News and Reports, and Pharmaceutical Research.

Citations in PNI are drawn from the four major newsletters: Drug Research Reports, (The Blue Sheet), FDC Reports, (The Pink Sheet), PMA Newsletter, and Washington Drug and Device Letter.

Other information sources for the pharmaceutical industry are covered in UNIDO Guide No. 20, in which the following abstracting and indexing services are listed:-

1. Berichte Physiologie, Physiologische Chemie und Pharmakologie (Reports of physiology, physiological chemistry and pharmacology)
   published by Springer Verlag,
   Berlin, F.R.G.
2. Bulletin Signaletique, 330: Sciences Pharmacologiques, Toxicologie
   published by Centre national de la recherche scientifique
   Centre de documentation du CNRS
   Paris, France
3. Chemical Abstracts, 63: Pharmaceuticals
   published by Chemical Abstracts Service
   American Chemical Society, Ohio State University,
   Columbus, Ohio, U.S.A.
4. Chemico Medical Abstracts
   published by Derwent Publications Ltd.
   London, U.K.

5. Excerpta Medica, 2C: Pharmacology and Toxicology
published by Elsevier Publishing Co.
Amsterdam, Netherlands

6. International Pharmaceutical Abstracts
published by American Society of Hospital Pharmacists
Washington, D.C., U.S.A.

7. IPA Information System
published by American Society of Hospital Pharmacists
Washington, D.C., U.S.A.

8. Meditsinskii Referativnyi Zhurnal: Razdel, Antibiotika
(Medical abstracting journal: section, antibiotics)
published by Vsesoiuznyi Nauchno-Issledovatel'skii Institut
Meditsinskoii Medikotekhnicheskoi Informacii
Moscow, USSR

9. Pharmaceutical Abstracts
published by College of Pharmacy
Austin, Texas, U.S.A.

10. Pharmacognosy Titles
published by University of Illinois at the Medical Center
College of Pharmacy
Chicago, Illinois, U.S.A.

11. Pharmazeutisches Jahrbuch: Referatesammlung des Internationalen Pharmazeutischen Schrifttums im Jahre (Pharmaceutical yearbook: annual collection of abstracts of international pharmaceutical publications)
published by Govi Verlag
Frankfurt/Main, F.R.G.

12. Produits et Problemes Pharmaceutiques
published by Société de productions documentaires
Paris, France

13. Referativnyi Zhurnal: Farmakoligiia, Khimioterapevticheskie Sredstva Toksikologiia (Abstract journal: pharmacology, chemotherapy and toxicology)
published by Vsesoiuznyi Institut Nauchnoi i Tekhnicheskoi Informatsii (VINITI), Moscow, USSR

14. Referatovy Vyber z Lekarenstvi: Pharmacy (Abstract journal: pharmacy)
published by Statni Ustav pro Zdravotnickou
Prague, Czechoslovakia

15. Reviews on Drug Interactions
published by Freund Publishing House Ltd.
Tel Aviv, Israel

16. Ringdoc Abstract Journal
published by Derwent Publications Ltd.
London, U.K.

17. Search: Drugs Division
published by Compendium Publishers International Corporation
Fort Lee, New Jersey, U.S.A.

IV-S THE RUBBER AND PLASTICS INDUSTRY

THE RUBBER AND PLASTICS RESEARCH ASSOCIATION

This Association (RAPRA) operates an International Technical Centre for Rubber and Plastics at Shrewsbury, U.K.

As part of its information services, the Association publishes RAPRA Abstracts, which concentrates on trade and technological information not usually included in the larger scientific and technical information data-bases. The abstracts are available in both printed and machine-readable forms.

The subject coverage is the technical and commercial information relating to the rubber and plastics industries worldwide including raw materials and monomers, polymers and polymerisation, compounding ingredients, intermediate and semi-finished products, applications, processing and treatment, properties and test, company news, new product information.

The present size of the database is about 60,000 items with a growth rate of 11,000 - 13,000 items per year excluding patents.

KKF (Kunststoffe, Kautschuk, Fasern)

This data-base is produced by Deutsches Kunststoff-institut, Darmstadt, FRG. It covers journals in polymeres chemistry, -physic and -technology, plastics and rubber.

The file exists since 1976 and contains about 24,000 documents, with a growth rate of 12,000 documents per year.

IV-T THE SHIPPING INDUSTRY

MARITIME RESEARCH INFORMATION SERVICE (MRIS)

MRIS is a machine-readable data-base corresponding to printed versions, MRIS abstracts and MRIS current awareness service. It is produced by the Maritime Transportation Research Board of the National Research Council, Commission on Socio-Technical Systems, Washington, D.C., U.S.A., and covers world-wide publications dealing with Maritime research and the Maritime industry. The current size of the data-base is approximately 11,000 items, with an annual growth-rate of 3,000 items. It is processed for searching by the producer and BATTELLE Columbus Laboratories.

BRITISH SHIP RESEARCH ASSOCIATION

B.S.R.A. of Wallsend, U.K., undertakes research projects for its membership. The resulting reports may be made generally available later.

As part of its information services to industry the Association publishes "The Journal of Abstracts", covering all aspects of ship design and operation, including construction and ship machinery and systems.

IV-U THE SOAP [illegible]D DETERGENT INDUSTRY

Information sources in the soap and detergent industry are covered in UNIDO Guide No. 24, in which are listed the following abstracting and indexing services:

1. *Bulletin Signaletique, 880: Genie Chimique, Industries Chimique et Parachimique*
   published by Centre National de la Recherche Scientifique
   Centre de Documentation du CNRS
   Paris, France
2. *Chemical Abstracts*
   published by Chemical Abstracts Service
   American Chemical Society, The Ohio State University
   Columbus, Ohio, U.S.A.
3. *Chemical Abstracts Service Source Index*
   published by Chemical Abstracts Service
   American Chemical Society, The Ohio State University
   Columbus, Ohio, U.S.A.
4. *Chemischer Informationsdienst* (Chemical information service)
   published by Verlag Chemie GmbH
   Weinheim, F.R.G.
5. *Fats, Oils, Detergents Yearbook*
   published by American Oil Chemists Society
   Chicago, Illinois, U.S.A.
6. *Fatty Abstracts*
   published by Foster D. Snell, Inc.
   New York, N.Y., U.S.A.

7. Fatty Acid News Digest
published by Soap and Detergent Association
New York, N.Y., U.S.A.

8. Glycerine News
published by United Kingdom Glycerine Producers' Association
London, U.K.

9. Grasas y Aceites
published by Instituto de las Grasas y sus Derivados
Seville, Spain

10. Japan Information Center of Science and Technology: Current Bibliography on Science and Technology and Complete Chemical Abstracts of Japan
published by Japan Information Center of Science and Technology, Tokyo, Japan.
Tokyo, Japan.

11. Patent Service
published by John W. McCutcheon, Inc.
Morristown, New Jersey, U.S.A.

12. Resumenes de Articulos Cientificos y Tecnicos, Serie A: Quimica Industrial
published by Centro de Información y Documentación del Patronato
Madrid, Spain

13. Search: Essential Oils, Soaps and Toiletries Division
published by Compendium Publishers International Corporation
Fort Lee, New Jersey, U.S.A.

14. Tropical Abstracts
published by Royal Tropical Institute
Amsterdam, Netherlands

IV-V THE STEEL AND IRON PROCESSING INDUSTRIES

STEEL CASTINGS RESEARCH AND TRADE ASSOCIATION

SCRA, located at Sheffield, U.K., as part of its information service produces bibliographies and an abstract journal, Steel Castings Abstracts. This journal covers the world literature in steel foundry technology and related subjects.

BRITISH CAST IRON RESEARCH ASSOCIATION

BCIRA, of Birmingham, U.K., as part of its information service produces an abstract journal, BCIRA Abstracts of Foundry Literature, covering the world literature in the field.

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / MINING

This journal is published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary, (monthly, in Hungarian language).

HUNGARIAN TECHNICAL ABSTRACTS JOURNALS / METALLURGY, FOUNDRY

This journal is also published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary (monthly, in Hungarian language).

HUNGARIAN KWIC INDEX / CORROSION

is published by the Hungarian Central Technical Library and Documentation Centre (HCTLDC), Budapest, Hungary .

IV-W THE WATER INDUSTRY

WATER RESEARCH CENTER

This U.K. Center has a range of information services including "WRC - Information". This is an abstract journal covering all aspects of water research and management. It is fully computerized.

SELECTED WATER RESOURCES ABSTRACTS (SWRA)

This data-base is produced by the Water Resources Scientific Information Center of the U.S. Department of the Interior, Washington, D.C., and is in both, printed and machine-readable form. It covers the water-related aspects of the life, physical, and social sciences as well as related engineering and legal aspects of the characteristics, conservation, control, use or management of water. Its present size is about 100,000 items with a growth rate of 14,000 items per year. The data-base is processed for on-line searching by the U.S. Energy Research and Development Agency.

WATER RESOURCE DOCUMENT REFERENCE SYSTEM (WATDOC)

This data-base is produced by Environment Canada of Ottawa, Canada.

WATER RESEARCH CENTRE

This centre, located at Stevenage, U.K., operates an extensive information and advisory service to members. The Centre also undertakes research for specific clients and the membership generally: a report series is published, including enquiry reports resulting from specific enquiries by members.

WRC Information

This abstract journal is produced by the centre and is available generally. Over 400 journals are scanned and the scope also includes reports and books. It is computer-produced, and an on-line version is planned. This may be offered over EURONET.

IV-X THE WELDING INDUSTRY

THE WELDING INSTITUTE

This institute, located in Cambridge, U.K., operates an international information service in welding technique and practice. The scope of the service is: brazing; soldering; thermal cutting; weld surfacing; metal spraying; inspection and non-destructive testing; welding design; performance of welded assemblies (fatigue, brittle fracture, corrosion); welding metallurgy; fabrication techniques; welded construction, and quality control.

Input material includes articles, standards, research reports, patents, etc. A document copy service is provided. The system is available internationally on a subscription basis. The basis for the following system components is a computerised data-bank, with a yearly input of 4,000 items:-

WELDASEARCH 1.	A personalised current awareness service, monthly.
WELDASEARCH 1.	Specialist list of references with abstracts (standard profiles on a retrospective basis).
WELDASEARCH 3.	Monthly abstracts bulletin in print form.
WELDASEARCH 4.	As for No. 3, but including computer-listed abstract numbers corresponding to personal profiles.

WELDASEARCH 5.	As for No. 3, but with computer listing of keywords allocated to each abstract.
WELDASEARCH 6.	A complete information storage and retrieval system, including all abstracts in printed form, with allocated keywords and a dictionary updated monthly.

IV-Y THE WOOD INDUSTRY

WOOD

This is a machine-readable data-base produced by the Royal Institute of Technology Library, Stockholm, Sweden. It covers the Literature of wood science and technology, wood processing and use. Forestry and pulp making is not included. Its growth rate is some 7,000 items per year. Data-base services are available from the producer.

TIMBER RESEARCH AND DEVELOPMENT ASSOCIATION

TRADA, located at High Wycombe, U.K., operates an information service for its members, reports etc. being available to non-members. The Association also produces a machine-readable data-base, derived mostly from input obtained by a series of exchange agreements with other organizations in the field throughout the world. This data-base, with an associated information storage and retrieval system, known as TINKER, is based on the production of computer-produced bibliographies which are available for purchase. Special retrospective searches are also available on a fee-paying basis. An SDI service is planned.

FURNITURE INDUSTRIES RESEARCH ASSOCIATION

FIRA, located in Stevenage, U.K., operates an extensive consultancy and advisory service for the furniture industry, not confined to the U.K.

It publishes, in addition, a quarterly bulletin, a series of research journals, statistical reports, market surveys etc. No abstract journal is produced.

ANNEX V

PATENTS AND NEGOTIABLE TECHNOLOGY SYSTEMS

This annex deals with systems that make it possible to identify and exploit technology in particular areas. The most direct method of identification is by a patent search, and several information systems of this kind exist. Moreover, a large number of the databases covered in Annexes I, II, and III also provide facilities for identifying patents in the input material: Some specifically include patents and patent applications in their field of coverage. Notes on special patents databases are included in Part A of this annex.

Outside the patent field, a different approach to information geared to the exploitation of new technology has resulted in systems which themselves provide a brokerage function between producers of new technology and potential users. These range from simple lists of products and processes available for licensing to computerised systems in which requesters may input their needs or problems and producers may input licensing opportunities, special expertise, etc. Such systems are briefly noted in Part B of this annex.

Finally, Part C deals with information on a particular aspect of existing technology, in the shape of actual equipment etc. which may be purchased (manufacturers' catologue systems).

Note: Details given, including numbers of items, are believed to be approximately correct as of December 1977.

V-A PATENT INFORMATION SYSTEMS

In addition to the systems mentioned below, reference should also be made to PATENT CONCORDANCE (Annex I, Chemistry, Chemical Abstract Service and APIPAT (Annex IV, Petroleum).

CENTRAL PATENTS INDEX

Name(s): Central Patents Index; CPI; Sometimes known as DERWENT.

Producer: DERWENT Publications, London, UK.

Subject, Scope and Coverage: Covers the patent literature of some 12 major patent publishing countries, in the following sections (each section constitutes a separate sub-database). A = Polymers, Plastics; B = Pharmaceuticals, C = Agricultural Chemicals; D = Food, Detergents; E = General Chemicals; F = Textiles, Paper; G = Printing, Photographics; H = Petroleum; J = Chemical Engineering; K = Nucleonics, Explosives; L = Refractories, Ceramics; M = Metallurgy).

Note: Patents are abstracted.

Products: Machine-readable and printed versions.

Database Services: SDI services available from producer. On-line version of the database is offered by System Development Corporation and will be offered by INFOLINE.

Availability: Access to the machine readable version is granted against payment to the producer, who retains all rights. Interactive interrogation facilities are available over TYMNET and are planned for EURONET (via INFOLINE).

CLAIMS/CHEM

Name(s): CLAIMS/CHEM, Class Code, Assignee, Index, Method Search-Chemistry

Producer: IFI/Plenum Data Company, Arlington, Virginia USA

Size, Subject Scope and Coverage: All U.S. chemical and chemically related patents plus foreign equivalents to U.S. patents from Great Britain, France, Germany, Belgium, and the Netherlands. Chemistry and Chemical Engineering; Food Science; Medicine; Mining and Metallurgy; Patents; Pharmaceutical, Petroleum and chemical industries. Size of database: about 422,000; annual growth rate 22,000 items.

Note: An enriched titles service; but including some abstracts.

Products: Machine-readable database and printed index journal.

Database Services: On-line search facilities offered by Lockheed Information Systems.

Availability: The machine-readable version is not commercially available, but interactive retrieval facilities are available over TYMNET and TELENET.

CLAIMS/GEM

Name(s): CLAIMS/GEM, Class Code, Assignee, Index, Method Search -- General, Electrical, particularly Mechanical corresponding to US Official Gazette, General, Mechanical and Electrical Section, 1975+.

Producer: IFI/Plenum Data Company, Arlington, Virginia USA.

Size, Scope and Coverage: All U.S. patents in the general, electrical and mechanical engineering related areas. Users are engineering related industries. Size of database: about 110,000 items, with growth rate of about 55,000 items per year.

Products: Machine-readable and printed version.

Database Services: Database is processed for on-line searching by Lockheed Information Systems.

Availability: The machine-readable version is not commercially available. Interactive interrogation facilities are available over TYMNET and TELENET.

CLAIMS/CLASS

Name: CLAIMS/CLASS

Producer: IFI/Plenum Data Company, Arlington, Virginia, USA

Size, Subject Scope and Coverage: Size of database: 23,000 records (since October 1977); anticipated growth rate by July 1978: to 90,000 records.

CLAIMS/CLASS gives indexed information pertaining to the US Patent classification system as detailed in the U.S.P.O. Manual of Classification.

ICIREPAT

Name(s): ICIREPAT, International Cooperation Information Retrieval Among Patent Offices.

Producer: Committee for International Cooperation in Information Retrieval among Patent Offices, United States, Department of Commerce, Patent Office, Washington, D.C. 20231.

Scope, Coverage and Size: Chemistry and Chemical Engineering; Patents; anticipated growth rate: 3,000 items per year.

Products:

Database Services:

Availability:

IFI COMPREHENSIVE DATA BASE

Name(s): IFI comprehensive data base, formerly Uniterm Index Tape Version, corresponding to printed version Uniterm Index to U.S. Chemical Patents, 1950^+

Producer: IFI/Plenum Data Company, Arlington, Virginia USA

Scope, Coverage and Size: All U.S. chemical and chemically related patents plus foreign equivalents to U.S. patents from Great Britain, France, Germany, Belgium and the Netherlands. Users are Pharmaceutical, petroleum and chemical industries, size of database: 430,000 items, growth rate about 22,000 per year.

Products: Machine-readable database and printed index journal.

Database Services: Database is processed for batch searching by producer.

Availability: Database and updates may be purchased for in-house use only.

INTERNATIONAL DOCUMENTATION IN CHEMISTRY

(IDC PATENTS DATABANK)

The IDC System (see under chemistry in Annex I) has as one of its most important components, a sub-database on chemical patents. For details refer to this entry.

INPADOC

Name(s): International Patent Documentation Centre: INPADOC

Producer: INPADOC, Vienna, Austria, under the auspices of the World Intellectual Property Organization (WIPO).

Scope, Coverage and Size: The database covers all documents from the Patent Offices of some 40 countries. Present size of the database is about 3 million documents, no abstracts are provided, Original documents are stored on microform.

Products: See database services

Database Services: Patent Family Service (PFS), Patent Classification Service (PCS), Patent Applicant Service (PAS), Numerical Data Base Service (NDB), INPADOC Patent Gazette (IPG), Individual Request for Family Service (IRF), Information Carriers, Additional Services, Copy Services.

Availability: While the database itself has not, as yet, been made available for interrogation, database services are available to the general public from INPADOC itself and associated agencies on repayment.

OFFICE OF TECHNOLOGY ASSESSMENT AND FORECAST DATA BASE

Name(s): OTAF Data Base

Producer: Office of Technology Assessment and Forecasts, OTAF U.S. Patent and Trademark Office, Washington, D.C.

Scope, Coverage and Size: Covers all U.S. patents from 1963. Users are planners, economists, government decision makers, researchers interested in a particular area of technology and patents.

Product: Machine-readable database.

Database Services: Database is processed for batch searching by the producer. Reports are produced twice a year focusing on technology areas experiencing high rates of growth and profile accounts of foreign country activities. Reports provide statistical and substantive analyses. Available through NTIS.

Availability: The database itself is not commercially available, but services from it are publically available against payment on a cost recovery basis.

V-B BROKERAGE SYSTEMS FOR NEW TECHNOLOGY

THE TECHNOTEC SERVICE

General

The TECHNOTEC Service is a part of WORLDTECH (a subsidiary of the Control Data Corporation), a global organization for the exchange of technology. The TECHNOTEC Service is essentially a computer data bank able to be interrogated over Control Data's CYBERNET network, which extends over North America, Europe and Australia.

Special Characteristics of the Service

TECHNOTEC is less an information service than a computer-based communication service, in which the database lists new technology from the point of view of its possible application, and clients of the service may also enter their problems which demand a technology transfer for their solution. Clients may also list their consulting or service expertise in particular problem areas. Thus, the service may be regarded as a kind of computerised market place for the exchange of technology relevant to specific needs. Thus, there are listings to "buy" (Technoquest) and listings to "sell" (Technostock). No formal system of indexing is used, clients of the service being virtually free to describe their entries as they wish, but they are encouraged to indicate applications, not necessarily within the field for which the technology was primarily developed.

The Database

In addition to the type of entries just described, the data bank contains a section on World Information Systems Exchange, which includes data on the sources of information, computer systems databases, and announcements of seminars and educational programs relating to the technologies in information systems. It is also possible to enter items describing business opportunities, i.e. joint ventures, investments, overseas marketing, etc., organizations may also enter the consulting expertise of their executives in order to promote exchange of technology on the executive or management level. It is also possible for researchers to enter details of ongoing research in order to contact other researchers involved in related research in another discipline. A further important element in the data bank is the TINA database (see this Annex), developed jointly by CDC and INSPEC. This provides abstracts of items appearing in the scientific and technical literature relating to physics, electrotechnology, electronics, computers and control, which indicate definite innovations.

Costs

The TECHNOTEC data bank is to some extent self-regulating, in that clients wishing to enter an item pay an annual fee, and clients wishing to search the database pay a search fee; thus, it can be expected that items for which little interest emerges will disappear from the database. The charge for entering an item (technoquest or technostock) is a minimum of $100 per year for 1,000 characters (plus 10c per character for items in excess of 1,000 characters); to search the system, clients pay a one time access fee of $10, plus charges based on search time, at the moment this averages $8-10 per search. It is also possible for clients of the service to specify a "contact fee" for disclosure of their names and addresses, should they wish to do so (i.e. in the case of joint venture proposals).

TECHNOLOGY INFORMATION ALERT (TINA)

TINA is a machine-readable database designed specifically for technology transfer by INSPEC. The coverage is the same as that of the normal INSPEC database, i.e., physics, electrotechnology, computers and control; the material included is however limited to items containing an innovation that is patent relevant or when they disclose a new device, equipment, system of manufacture, measurement method, etc.

Selection Criteria

The criteria for deciding whether an item is to be included in the database have developed from INSPEC's involvement with patent information. The 1970 Patent Cooperation Treaty required that patent search offices should search not only previously issued patents, but all articles that appeared in the literature which might be relevant to a particular patent claim. Under the auspices of the World Intellectual Property Organization (WIPO). INSPEC provided this type of service to a number of Patent Offices. The TINA database selection and indexing system has been built up from this expertise.

Indexing

An item for inclusion in TINA is indexed using the normal descriptors as used in the INSPEC database itself but is further scanned by specialists for its innovative content. Items for inclusion are further classified according to a subject heading system derived from the international patents subject codes. These subject headings are also used as profile descriptions for current awareness and retrieval. The main subject headings are as follows:

Section G01

APPARATUS AND SYSTEMS FOR
MEASURING AND TESTING
(21 sub-sections)

Section G02

OPTICS
(2 sub-sections)

Section G03

PHOTOGRAPHY, CINEMATOGRAPHY,
ELECTROGRAPHY AND HOLOGRAPHY
(8 sub-sections)

Section G04

HOROLOGY
(1 sub-section)

Section G05

CONTROLLING AND REGULATING
(1 sub-section)

Section G06

COMPUTING
(3 sub-sections)

Section G11

INFORMATION STORAGE AND
RETRIEVAL
(5 sub-sections)

Section G21

NUCLEONICS
(1 sub-section)

Section H01

ELECTRIC COMPONENTS
(18 sub-sections)

Section H02

ELECTRIC POWER GENERATION,
CONVERSION AND DISTRIBUTION
(2 sub-sections)

Section H03

ELECTRONIC CIRCUITS
(8 sub-sections)

Section H04

TELECOMMUNICATIONS
(8 sub-sections)

Section H05

ELECTRIC TECHNIQUES
(4 sub-sections)

Each main subject heading is divided into several sub-subjects, which form bases for retrieval files.

Utilisation

The TINA database is currently augmented by about 10,000 items per year and is available for both interactive interrogation (a descriptor system) and for current awareness services on the CYBERNET network established by the Control Data Corporation, as part of their TECHNOTEC service. The alerting service costs an annual subeciption of $1,000 plus $60 per profile; no charge is made for profiles in excess of 50, so that for a maximum charge of $4,000 per year, subscribers can receive the entire database in sections according to standard profiles. For interactive searching, the cost is about $12 per search plus an identification fee of $2 per item if journal details are required. Where a client has no terminal, the current awareness service is made available by post. For further details, see under TECHNOTEC Service.

V-C DATA BANKS ON PRODUCT DATA

Several product data-banks on the properties of individual products exist, for example the European Space Agency's data-bank on high-reliability electronic components, which lists all high-reliability electronic components, such as resistors, capacitors, etc. and which may be searched interactively for type, characteristics, and performance. The data-bank may be searched by numerical as well as descriptive terms, so that a component having specific performance characteristics may be isolated, or, if one does not exist, the nearest matching specification can be found. The system lists test data particulars, manufacturer and nearest agent. Outside such specialised data-banks, more generalised data-banks exist, based on manufacturers and other information: see, for example, the ARIANE system under the Building and Construction Section of Annex IV. The system described below is an example of comprehensive systems derived from manufacturers catalogues and other data, which is not specific to particular products or particular industries, i.e., it is a generalised approach to providing product information.

THE VISUAL SEARCH MICROFILM FILES (VSMF) SYSTEM

This system is produced by Information Handling Services of Englewood, Colorado, U.S.A., with agencies in Canada (Toronto), Europe (Frankfurt) and Japan (Tokyo). Inquiries for the Middle East, Africa, and Latin America are dealt with from the Headquarters of the company.

3...

The basis of the system is several million pages of data from manufacturers catalogues, involving information about products, suppliers, specifications, standards, etc. These are reduced to microform, assembled into about a 700 data-bases, and are indexed to a common standard, so that searches can be made of individual data-bases, groups, or the whole system complex. The throughput of material is approx. 40,000 pages per month, including amendments to information already on file. Some 3,000 organizations throughout the world use the system.

Subscribers receive the data-base, or portionsof it, according to their requirements, on microform cassette accompanied by printed indexes which rapidly permit the location of a particular document by cassette and frame number. It is intended that the system is interrogated using the index and a microform-reader printer, so that individual frames may be quickly located and hard copies made if required.

Services offered

Information Handling Services offer the following services consisting of portions of the data-bases and the relevant indexes. In addition to those mentioned below, there are further services of domestic interest to U.S. users only, including U.S. government and government agency specifications and standards.

Vendor product data includes product-oriented data, Design engineering, Metric Design, Integrated Circuit Parameters, Semiconductor Parameters, Marine Engineering, Building Products

Service/Product Selectors.

Vendor-oriented data includes building products, plant engineering, gas appliance data-bank, documentation service, distributor catalogue, transportation and materials, and handling.

Industry codes and standards include industry standards locator index, ACI-American Concrete Institute, ANSI-American National Standards Institute, API-American Petroleum Institute, ASME-American Society of Mechanical Engineers, ASTM-American Society for Testing and Materials, AWS-American Welding Society, AWWA-American Water Works Association, IEEE-Institute of Electrical and Electronic Engineers, NEMA-National Electrical Manufacturers Association, EIA-Electronic Industries Association, NFPA-National Fire Protection Association, SAE-Society of Automotive Engineers, UL-Underwriters Laboratories.

International standards include ISO-International Organization for Standardization, IEC-International Electro-Technical Commission.